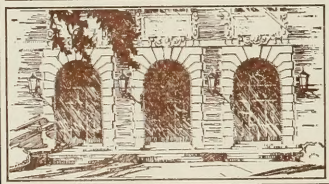




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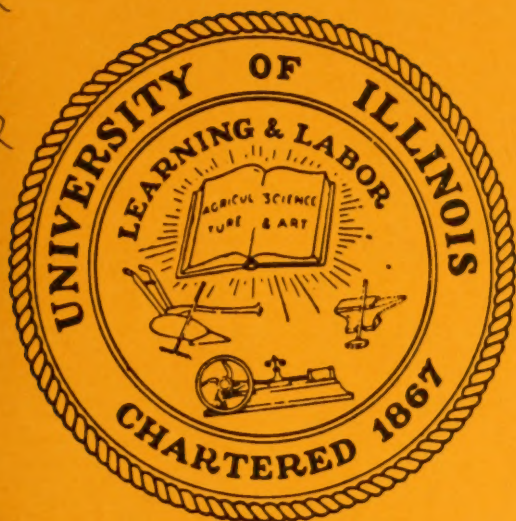








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# STUDIES IN THE LINGUISTIC SCIENCES

VOLUME 3, NUMBER 1 SPRING, 1973

DEPARTMENT OF LINGUISTICS, UNIVERSITY OF ILLINOIS  
URBANA, ILLINOIS 61801

# STUDIES IN THE LINGUISTIC SCIENCES

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# **STUDIES IN THE LINGUISTIC SCIENCES**

(WORKING PAPERS)

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## THE DERIVATION OF A RELATIVE INFINITIVE CONSTRUCTION

Georgia M. Green

The purpose of this investigation is to examine the properties and derivation of the construction exemplified by the sentences in (1), in particular, the deletion rule apparently operating to produce sentences like (1b-1d).

1a. John brought a chair for Mary to sit on.

1b. John brought a deck of cards to play with.

1c. John brought a puzzle to amuse himself with.

1d. John brought a punching bag to vent his spleen on.

This construction is of interest for at least the three following reasons. First of all, as I shall argue in Section 1, the rule which apparently operates to produce such structures seems to provide a counterexample to Ross' Complex Noun Phrase Constraint (CNPC) in that it deletes an element over a variable from a clause in a complex NP. This may seem to be a pseudo-problem since this rule looks like simply a sub-case of Super-Equi (SE), which has been observed to flaunt island constraints. However, as I argue in Section 2, despite many striking similarities, this rule cannot be a sub-case of SE. Both rules are exempt from certain island constraints, but under different conditions. Other differences are also examined. Third, even if this rule should ultimately turn out to be analysable as a sub-case of SE (and an attempt to do this is made in Sec. 2), the derivation of the construction in (1) is subject to a variety of unpredicted constraints (detailed in Section 3), several of which apply only when relevant identity conditions hold between the head and some element in the highest clause within the complex NP. That is, the constraints do not hold across clause boundaries inside the island.

Section 1. The deletion rule operating to produce sentences like (1b-1d) has several properties worth noticing. First of all, it is an identity deletion, as indeed (1c) and (1d) suggest. It is not a free deletion of an unspecified or indefinite NP as in John was hurt [by Indef] or The children have eaten [indef]. If it were, sentences (2a) and (2b) would be equivalent to (1b), which they are not, and (2d,e) would be as grammatical as (2c), and (2g) as grammatical as (2f,h).

- 2a. John brought a deck of cards for someone to play with.
- 2b. John brought a deck of cards to be played with.
- 2c. It is hard for one to accept that.
- 2d. \*John brought a book for one to read.
- 2e. \*Joan brought a book to amuse oneself with.
- 2f. Joan brought a toy that it will be easy for one to amuse oneself with.
- 2g. ?Joan brought a book that it will be easy to amuse oneself with.
- 2h. One may bring a book that it is easy to amuse oneself with.

Rather, (1b) asserts or implies that it is John who (possibly among others)<sup>1</sup> will play with the cards, while (2a) suggests that John will not play, and (2b) is non-committal. Sentence (2d) shows that an indefinite NP is not as acceptable in this construction as elsewhere, and sentences (1c) and (2e-h) show that the deleted NP must have a coreferential antecedent.

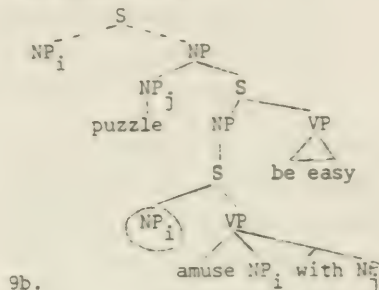
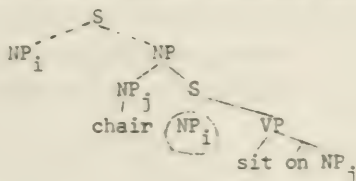
Second, like the Super-Equi-NP-Deletion discussed by Grinder (1970), this deletion operates over a variable, as shown by (3) and (4).<sup>2</sup>

- 3. John brought a toy that it was obvious it would be easy to amuse himself with.
- 4. John thought about the possibility of it being obvious that it would be necessary to bring something it would be legal to amuse himself with.

Grinder claimed that Super-Equi (SE) and Equi (E) were the same rule, Equi being merely the sub-case of application into an immediately commanded complement. Like E/SE, this deletion is obligatory when applying into an immediately commanded clause,<sup>3</sup> but optional if applying into a more remotely commanded clause, as shown by the ungrammaticality of (5) and (6) compared to (7) and (8).

- 5a. \*I know you'll bring a chair for you to sit on.
- 5b. \*I know you'll bring a chair for yourself to sit on.
- 5c. \*I know Mary will bring a puzzle for her to amuse herself with.
- 5d. \*I know Mary will bring a puzzle for herself to amuse herself with.
- 6a. \*John<sub>i</sub> hoped him<sub>i</sub> to win.
- 6b. \*John<sub>i</sub> hoped himself<sub>i</sub> to win.
- 7a. John brought a book which it will be easy (for him) to read.
- 7b. John brought a toy which it will be fun (for him) to amuse himself with.
- 8a. I know you'll think it is unnecessary (for you) to bring a chair.
- 8b. I know Mary'll think it is unnecessary (for her) to kill herself.

Third, assuming that this deletion rule operates on structures like (9) to delete the circled NP, it operates to delete something from a structure of the ordinarily inviolate type which Ross (1967) termed an island, and therefore the rule shall be called Amchitka Deletion (AD).



Whether this deletion therefore provides a counterexample to Ross' Complex Noun Phrase Constraint (CNPC) by not yielding an ungrammatical sentence, is not, however, self-evident. The CNPC says that no element in an S dominated by a NP with a lexical head noun may be chopped from that S by a rule which must refer to an element outside the island, and so would seem to prohibit deletions of the type characterized by (9). However, Ross observes at the end of Chapter 6 that not all rules which delete constituents over a variable are constrained by the constraints on variables, that rules which delete backwards into a subordinate clause, as well as forwards more or less freely (e.g. many kinds of pronominalization and identity of sense deletions in many languages) are not subject to the constraints, that only unidirectional deletion rules are subject to them.<sup>4</sup> Thus, whether or not AD is a counterexample to Ross' formulation of island constraints depends, strictly speaking, on whether or not it is a unidirectional rule. The answer to that is not as clear as it could be, as differing judgements on the sentences of (12) testify. These contrast to the clear reactions to Equi and SE sentences in (10) and (11) with parallel structural relations.

One of Grinder's arguments that Equi was a subcase of SE was that the same constraints hold for backwards application of SE as for backwards Equi: the deletee may precede the controller only if it is commanded by and does not command the controller. Thus, parallel to (10), where Equi

has applied, is (11) with SE.

- 10a. Talking to himself<sub>i</sub> soothes John<sub>i</sub>.
- 10b. \*Talking to himself<sub>i</sub> proves that John<sub>i</sub> is crazy.
- 10c. That John<sub>i</sub> talks to himself proves that he<sub>i</sub> is crazy,
- 11a. That amusing himself<sub>i</sub> is easy is no comfort to John<sub>i</sub>.
- 11b. \*That amusing himself<sub>i</sub> is easy proves that John<sub>i</sub> is simple.
- 11c. That it is easy for John<sub>i</sub> to amuse himself<sub>i</sub> proves that he<sub>i</sub> is simple.

Grammaticality judgements on AD sentences with parallel structural relationships between controller and deletee are exemplified by (12). Most informants found (12a) and (12d) as unacceptable as (13), where the controller does not command the deletee, and pronominalization would be as bad as deletion.

- 12a. %A talking mouse to amuse himself<sub>i</sub> with was given to John<sub>i</sub> by the esteemed Senator from Oklahoma.
- 12b. A talking mouse to amuse himself<sub>i</sub> with came to/for John<sub>i</sub> today as a gift from my Uncle Harry.
- 12c. Something to amuse himself<sub>i</sub> with seems to be just what John<sub>i</sub> needs.
- 12d. %Sally gave a toy to amuse himself<sub>i</sub> with to her cousin<sub>i</sub> who was in the Marines.
- 13. \*A talking mouse to amuse himself<sub>i</sub> with said that John<sub>i</sub> would never be a poet.

There was wide variation on (12b) and total agreement that (12c) was grammatical. I know of nothing which predicts that (12b,c) should be acceptable and (12a,d) unacceptable. The ungrammatical (12a) and the grammatical (12c) both have earlier stages in their derivations which meet the structural description for forwards deletion; conceivably (12d) does--cf (14):

- 14. Sally gave her cousin<sub>i</sub> who was in the Marines a toy to amuse himself<sub>i</sub> with.

Still, one cannot explain the ungrammaticality of (12d) with any hocus-focus about relative ordering of AD and some rule of dative movement. Notice that structures like (12d) are ungrammatical even if AD hasn't applied, as in (15a), even though AD is not obligatory if the deletee precedes the controller, as (15b) shows. The ungrammaticality of (15a)



is as unpredicted by the conditions on pronoun-antecedent relationships as the ungrammaticality of (12d). In (15a), the pronoun him precedes but does not command the antecedent cousin, which does command the pronoun, so (15a) should be all right. Sentence (15c) shows merely that the construction in question can occur as a verb-adjacent direct object in a sentence with a dative phrase.

15a. \*Sally gave a toy for him<sub>i</sub> to amuse himself<sub>i</sub> with to her cousin<sub>i</sub> who was in the Marines.

15b. A talking mouse for him<sub>i</sub> to amuse himself<sub>i</sub> with was given to John<sub>i</sub> by the esteemed Senator from Oklahoma.

15c. Sally gave a toy for me to amuse myself with to her cousin who is in the Marines.

The derivation of sentence (12b), however, apparently requires that AD apply backwards; the deep order of the deleted subject of amuse and the object of to/for is presumably the same as their surface order.<sup>5</sup> If we take this as evidence that AD is a bi-directional rule, and the sentences of (16) provide further evidence that AD can apply backwards, then we should not expect it to obey island constraints.

16a. That a toy to amuse himself<sub>i</sub> with might be necessary surprised John<sub>i</sub>.

16b. That a toy to amuse himself<sub>i</sub> with may be necessary suggests that John<sub>i</sub> is important.

Significantly, however, it does not violate the Coordinate Structure Constraint (CSC), the Sentential Subject Constraint (SSC) or the Left Branch Constraint (LBC) with abandon. Like Super-Equi, it may violate one clause of the CSC, the one which forbids the removal of part of a conjunct, as (17b) and (18b) illustrate, but only if the conjuncts are adjuncts to different NPs or verbs--if AD and SE apply to conjuncts which are adjuncts to the same node, the resulting sentences, as in (17d) and (18d) are ungrammatical. And if SE or AD applies to delete a complete conjunct, the result, as in (17ghi) and (18ghi), is again ungrammatical.

17a. I brought a toy for me to amuse myself with and a box of candy for you to eat.

17b. I brought a toy to amuse myself with and a box of candy for you to eat.

17c. I brought a toy for Bill to fix and for me to amuse myself with.

17d. \*I brought a toy for Bill to fix and to amuse myself with.

- 17e. John brought a chair for him and me to sit on.
- 17f. John brought a chair for me and him to sit on.
- 17g. \*John brought a chair for and me to sit on.
- 17h. \*John brought a chair and (for) me to sit on.
- 17i. \*John brought a chair. for me and to sit on.
- 18a. John thought it would be possible for him to wash himself in Lake Erie and necessary for someone to give him permission to.
- 18b. John thought it would be possible to wash himself in Lake Erie and necessary for someone to give him permission to.
- 18c. John thought it would be possible for him to wash himself in lake Erie and for Sam to waterski on it.
- 18d. \*John thought it would be possible to wash himself in Lake Erie and for Sam to waterski on it.
- 18e. John thought it would be possible for him and Jan to swim in Lake Erie.
- 18f. John thought it would be possible for Jan and him to swim in Lake Erie.
- 18g. \*John thought it would be possible for and Jan to swim.
- 18h. \*John thought it would be possible for Jan and to swim...
- 18i. \*John thought it would be possible and (for) Jan to swim...

That the SSC, forbidding deletion from a sentential subject, cannot be violated by AD is shown by the ungrammaticality of (19a,b). Typically, if the sentential subject (for John<sub>i</sub> to amuse John<sub>i</sub>) is extraposed, as in (19d,e), there is no violation.<sup>6</sup>

- 19a. \*John brought a toy with which amusing himself would be legal/easy/possible.
- 19b. \*John brought a toy (which) amusing himself with would be legal/easy/possible.
- 19c. \*John brought a toy amusing himself with which would be easy.
- 19d. John brought a toy with which it would be easy to amuse himself.
- 19e. John brought a toy (which) it would be easy to amuse himself with.

Regardless of whether Ross' distinction between bi-directional and unidirectional deletion rules is correct, or whether (12b) and (16) to the contrary, AD is a unidirectional rule, it is significant that AD characteristically deletes into one kind of island, but cannot in general delete into islands. For this reason, the nature of the deletion and the nature of the island deserve special attention.

It is interesting to note that Grosu (1972) takes issue with Ross' distinction which he calls the Dichotomous Behavior Principle, and proposes instead to limit the island constraints to rules where an independent condition requires that "an element coreferential to the deletor occur within some configuration which contains the deletee" (23). Since AD manifestly does not require such a condition (cf. (1a)), Grosu's principle predicts that it will not obey island constraints. However this prediction is incorrect, as AD does obey the whole conjunct clause of the CSC, and under certain structural conditions, the piece-of-a-conjunct clause. Grosu's analysis of coordinate structures as head-and-dependent constructions, and his consequent reduction of the CSC to a subclause of the CNPC, reformulated as the claim that satellites can be chopped but not maimed (Subservient Satellite Constraint) predicts incorrectly that violations of the whole-conjunct clause will be permitted while violations of the part-of-a-conjunct clause will always yield ungrammatical sentences. Of course Neeld's (1971) examples showing that several rules obey the whole-conjunct clause but not the part-of-a-conjunct clause are not counterexamples to Grosu's claim since Grosu's exclusion of deletion rules which don't require obligatory coreferentiality makes no prediction about these rules (VP-deletion, Super-Equi, etc), and their properties with respect to island constraints are not explained.

Section 2. I have mentioned similarities between AD and E/SE, but I do not think it is possible that a case can be made for considering all three to be a single rule. Although Neubauer (1970) has shown that SE may operate into complex NP islands of both types, this property nonetheless serves to distinguish SE from AD, for as Neubauer pointed out, speakers whose speech is constrained by Grinder's Intervention Constraint (IC, q.v. below) find ungrammatical such sentences as (20a), where the head of the relative clause could have served as a possible controller for the deletion. In contrast, sentences like (20b) and (20c) are perfectly acceptable to these speakers.

20a. \*John met a girl who said that it might be hard to blink his eyes.

20b. John brought a girl to bat his eyelashes at. (AD)

20c. I need a man in whom to confide my troubles. (AD)

Second, SE can invade a variety of island types without producing ungrammaticality as shown by (21).

- 21a. John left because it became impossible to hold his breath any longer. (Adverbial clause island)
- 21b. Joan knew that holding her breath for six hours would amaze the audience. (Sentential subject island)
- 21c. Joan heard a claim that it was illegal to criticize herself. (Complex NP island)

However, it cannot violate more than one of Ross' island constraints at a time, as shown by (22). Notice that (22d,e) show that SE can with impunity violate the same constraint twice.

- 22a. \*Joan heard a claim that criticizing herself would be unwise. (CNPC + SSC)
- 22b. \*Joan heard a claim that criticizing herself would impress Sam. (CNPC + SSC)
- 22c. \*Joan thought that the book's mentioning the fact that it was difficult to amuse herself was unfortunate. (SSC + CNPC)
- 22d. Sandy and Max got a letter that had a clause that said that trying to improve themselves would be a waste of time. (CNPC + CNPC, not in AD environment)
- 22e. Sandy and Max believed the claim that they would get a letter that said that trying to improve themselves would be a waste of time. (CNPC + CNPC, not in AD environment)

Claiming that the same restriction holds for AD would predict its inability to violate the SSC and the CSC, as demonstrated in (17) and (19), since of necessity it is already violating the CNPC, and this could be taken as evidence that AD and SE are the same rule were it not for the fact that AD cannot violate the CNPC twice, as shown by (23).

- 23a. \*John met a girl who had a toy to amuse himself with.
- 23b. \*John found a store that had a toy to amuse himself with.
- 23c. \*John believed the claim that Carson's had a toy to amuse himself with.

The sentences of (23) show that AD cannot delete into a relative or claim that clause containing the relative-like clause it normally deletes into. SE, however, can violate two complex NPs as easily as one, as illustrated by (22d,e), where the intervening NPs are by virtue of their grammatical or semantic nature, not possible controllers.<sup>7</sup> This means that SE and AD are not constrained identically; maintaining an account like that proposed above for the ungrammaticality of (22a-c), one would be forced to say of SE that it can violate no more than one island constraint



at a time, but of AD that it can make no more than one violation of an island constraint at a time.

In addition, if the controller precedes, but does not command the deletee, sentences with AD are much worse than comparable sentences with SE, as the comparison of (24a) and (24b) shows, although, as (24c) shows, the input to AD is not ill-formed.

24a. ?John's being dirty meant that washing himself was a must. (SE)

24b. \*John's being bored meant that a toy to amuse himself with would have to be bought.

24c. John's being bored meant that a toy for him to amuse himself with would have to be bought.

Another way in which AD differs from SE concerns Grinder's Intervention Constraint (IC) (Grinder 1970). Roughly, the IC is a filter which says that a deletion is blocked if there is a possible controller which bears more primacy relations to the deletee than the actual controller, or if a possible controller bearing equivalent primacy relations intervenes between the actual controller and the deletee and is not a clausemate of the actual controller. Equivalent structures which should block deletion according to Grinder's IC do block it for SE, but do not block it for AD. In the following sentences the NP John intervenes between the controller I (the deleted or suppressed subject of the performative in the (a) and (c) sentences) and the deletee. Both John and I both precede and command the deletee; John and I are not clausemates. The deletion should be blocked, and it is blocked for the SE cases in (25) but it is not blocked for the AD cases in (26).<sup>8</sup>

25a. \*John thought it was possible that it would be legal to bring my own lunch.

25b. \*I assumed John thought it was possible that it would be legal to bring my own lunch.

25c. \*John thought about the possibility that it would be necessary to amuse myself.

25d. \*I assumed John thought about the possibility that it would be necessary to amuse myself.

26a. John knew of a door jamb which it would be impossible to stub my toe on.

26b. I thought John knew of a door jamb which it would be impossible to stub my toe on.

26c. John knew of a door jamb which it would be impossible to hurt myself on.

26d. I thought John knew of a door jamb which it would be impossible to hurt myself on.

AD, then, is a rule which deletes noun phrases under identity, over a variable. It appears to characteristically, as an essential property, delete NPs from within islands, and although it has been claimed that at least one other rule, SE, may do this, the applicability of AD with certain precede and command relations between controller and deletee, and its properties with regard to the Intervention Constraint distinguish it from E/SE. It is probably predicted by Ross' Formulation of Island Constraints, and definitely predicted by Grosu's formulation, that AD and SE will not be subject to these constraints. Yet, they are not totally immune to the constraints; only one clause of the CSC may be violated, and that only in certain kinds of structures. The SSC may not be violated by AD at all, and AD may not make additional violations of the CNPC beyond those it makes whenever it applies. Thus, the structures to which AD applies merit investigation in order to determine the extent to which one can predict AD's ability to delete noun phrases under identity over a variable from inside an island.

Amchitka Deletion constructions do have a number of peculiar properties.

1. The deletee must be sentient, as the sentences (27) show, regardless of whether or not it is deleted.

27a. John brought a book to amuse himself with.

27b. John brought a book which it will be easy for him<sub>i</sub> to amuse himself<sub>i</sub> with.

27c. \*Those old books brought book lice to be eaten by into the house.

27d. \*Those old books brought book lice which it will be possible for them to be eaten by.

2. The disrupted island may not contain an overt negative in the highest clause if it contains the deletion site, as the sentences of (28) show. The sentences (29) show that it may contain a negative in lower clauses, both in the clause containing the deletion site and in the clause containing the NP relativized. The sentences of (30) show that the highest clause may contain a covert negative, even if it contains the deletion site.

- 28a. \*John brought some food to not gorge/starve himself with.
- 28b. \*John brought some food with which not to impose on Mary.
- 28c. John brought some food which it wouldn't be hard to eat.
- 29a. John brought some food which it would be hard not to try to eat.
- 29b. John brought some food which it would be necessary to convince Bill not to eat.
- 29c. John brought some food which it would be hard not to stuff himself with.
- 30a. John brought some food to refuse to eat.
- 30b. John brought a friend to dissuade (from voting).
- 30c. John brought a friend for Bill to dissuade.

3. The disrupted island is not an adverb. Adverbs of all sorts may be preposed as illustrated in (31), but as the sentences of (32) show, these clauses may not. Of course, ordinary relative clauses may not be preposed either, as (33) shows.

- 31a. With a knife, Seymour sliced the salami.
- 31b. Because he was late, Seymour took the bus.
- 31c. In order to arrive on time, Seymour walked fast.
- 31d. To Chicago, Seymour hurried with his precious cargo.
- 32a. \*To sit on, John brought a chair.
- 32b. \*To gorge himself on, John brought some candy.
- 32c. \*For Mary to play with, John brought a puzzle.
- 32d. \*Which it would be fun to play with, John bought a toy.
- 32e. \*With which it would be fun to play, John bought a toy.
- 33a. \*Which was from India, John broke a vase.
- 33b. \*Who Bill hit, I met a boy.
- 33c. \*Which Gladys was hiding under, Cyndy slept in a bed.
- 33d. \*Under which Roosevelt was sitting, Gladys sat on a chair.

4. The verb of the disrupted island refers to the future relative to the time of the main verb (commanding verb), and the island expresses an intention or purpose of the subject of the commanding verb in performing the action referred to by the commanding verb. For example, in (30b) the reason John brought a friend was to have someone to dissuade. In (30c)

he brought a friend in order for Bill to have someone to dissuade. However, these 'purpose infinitives' are quite different from those found in sentences like (34).

- 34a. John eats avocados to gain weight.
- 34b. Mary kissed a frog in order to turn it into a prince.
- 34c. Mary bought a sewing machine in order for Bill to be able to make his own clothes.

For one thing, as (34b) shows, real purpose infinitives may follow in order; as (35) shows, relative purpose infinitives cannot.

- 35a. \*John brought a chair in order to sit on.
- 35b. \*John brought a chair in order for Bill to sit on.

Second, relative purpose infinitives have a 'hole' where the co-referent of the head noun was, e.g. the object of on in (35). The purpose infinitive in (34c) is logically complete, as are those in (34a, b) except for the independently deleted subjects.

Third, as shown in (36), relative purpose constructions can have a relative word if it is the object of a preposition which is pied piped, or if its coreferent is not in the highest clause subordinate to the head. Thus (36d, d).

- 36a. John brought a chair to sit on.
- 36b. \*John brought a chair which to sit on.
- 36c. John brought a chair on which to sit.
- 36d. John brought a puzzle which it would be easy to amuse himself with.

Garden-variety purpose infinitives and clauses cannot immediately follow relative pronouns as shown in (37):

- 37a. \*John ate a raw egg which to impress Jane.
- 37b. \*John ate a raw egg which in order to derive nourishment from it.

Fourth, if a purpose clause or infinitive contains a reference to a previously mentioned NP, it may have a pronoun there as in (38a). But the relative-like construction to which AD applies permits no such pronoun, presumably because it would be redundant--the NP slot whose slot it fills having been deleted or moved as in (38b, c).

- 38a. I bought some toys in order to amuse myself with them.
- 38b. \*I bought a toy to amuse myself with it. (C, \* on one reading)



38c. \*I bought some toys which it will be fun to amuse myself with them.

38d. \*I bought some toys which it will be fun for you to amuse yourself with them.

Finally, ordinary purpose infinitives may (as in 39) contain negatives while relative purpose infinitives, as noted above may not.

39a. John keeps kosher to not offend his mother.

39b. John took the bus in order not to be late.

Observing similar properties in the Latin constructions traditionally called relative purpose clauses, Robin Lakoff (1968:195-211) proposed that they originated as complements of an abstract verb of intent which required that there be no negative in its complement, suggesting 'designate'<sup>9</sup> as a prime candidate. If we were to transfer this analysis into English, we would be claiming that the underlying structure of John brought a chair to sit on, and John brought a chair for Bill to sit on were roughly as in (40).

40a. John brought [<sub>np</sub> a chair<sub>i</sub> [<sub>s</sub> John/designate [<sub>np</sub> [<sub>s</sub> John sit on chair<sub>i</sub>]]]] hope<sub>j</sub> ]

40b. John brought [<sub>np</sub> a chair<sub>i</sub> [<sub>s</sub> John/designate [<sub>np</sub> [<sub>s</sub> Bill sit on chair<sub>i</sub>]]]] hope<sub>j</sub> ]

and that a subsequent rule deleted or suppressed the verb 'designate' and its subject. Does such an analysis provide any way out of the dilemma posed by AD, the deletion of such NPs as the subject of sit in (40a) and does it provide any insight into the restrictions on the use of relative pronouns in this construction?

At first, it appears to provide a way out of the AD dilemma insofar as the deletion of such an NP would now be subject to a controller inside the island, the subject of the immediately higher verb 'designate' in fact. Where there is a variable inside the island, as in John brought a toy which it will be legal to amuse himself with, with an underlying structure like (41), the deletion would be characterizable as Super-Equi, Equi over a variable.

41. John<sub>i</sub> brought [<sub>np</sub> a toy<sub>j</sub> [<sub>s</sub> John<sub>i</sub>/designate [<sub>np</sub> [<sub>s</sub> [<sub>np</sub> [<sub>s</sub> John<sub>i</sub> amuse John<sub>i</sub> with toy<sub>j</sub>]] be legal]]]] hope<sub>j</sub> ]



Unfortunately, there are at least three major obstacles to such an analysis. First of all, in such sentences as (42), where the head of the relative purpose infinitive does not refer to any object, it is nonsense to speak of designating that object or even hoping or expecting anything concerning it.

42a. John couldn't think of anything to amuse himself with.

42b. John didn't bring anything to sit on.

43a. John couldn't think of anything which he 

*designated	{
expected	
hoped	

 to amuse himself with.

43b. John didn't bring anything which he 

*designated	{
expected	
hoped	

 to sit on.

The sentences of (43) with expect and hope, while grammatical on a reading which concerns an ongoing expectation or hope with respect to some unspecified but presumably definite objects, are not equivalent to (42). The closest I can come to a paraphrase of (42) which is syntactically comparable to (43) would be to use a modal like 'can', as in (44).

44a. John couldn't think of anything which he could amuse himself with.

44b. John didn't bring anything which he could sit on.

Unfortunately, in (44b), the could must be interpreted as epistemic (intransitive, like 'possible'), and taking a sentential complement as in (45a); (44b) is not equivalent to (45b).

45a. John didn't bring anything which [[for John to sit on] would be possible]

45b. John didn't bring anything which [John was capable of [John sitting on]]

If the modal has a subject complement, the Equi/Super-equi solution is no longer available, since there is no controller inside the island. If even 'possible' and epistemic 'can' are two-argument predicate, there is a compelling argument which still holds: even if a third occurrence of John acts as a controller for the deletion of the subject of sit, it must be itself deleted by a rule which deletes NPs under identity, over a variable, and into an island, as (48-51) demonstrate.

Second, there are relative purpose infinitives such as (46) into which no designation or expectation clause with a subject identical to the deleted NP could sensibly be intraposed. The sentences of (46) are not equivalent to those of (47).

46a. John brought us a book to amuse ourselves with.

46b. John brought us a book to read.

47a. John brought us a book which we expected/hoped/designated to amuse ourselves with.

47b. John brought us a book which we intended to read.

Again, a modal such as could could be used in place of hoped or intended, but as before, it might not necessarily require an appropriate subject inside the relative clause island.

Third, even if some such abstract verb-E/SE analysis could be worked out, it would only be giving the deletion problem another name. The reason for this is that the deletion of the 'x intend' or 'be possible for x' clause is not a free deletion (cf. Grinder 1971), but is subject to an identity condition: in order for the subject of 'intend' or whatever to be deleted, it must be identical to some NP outside the relative clause it is part of. Thus while (48a) or (48b) could be the source of (48c), (49a) or (49b) couldn't be the source of (49c), whose meaning is closer to (49d).

48a. John<sub>i</sub> brought a book which NP<sub>i</sub> intended for NP<sub>i</sub> to read.

48b. John<sub>i</sub> brought a book which for NP<sub>i</sub> to read would be possible

48c. John brought a book to read. (for NP<sub>i</sub>).

49a. I brought a book which John<sub>j</sub> intended for NP<sub>j</sub> to read.

49b. I brought a book which for John<sub>j</sub> to read would be possible  
(for NP<sub>j</sub>)

49c. I brought a book for John to read.

49d. I brought a book which I intended for John to read.

Notice that given this analysis of AD constructions, Grosu's formulation of the relevant island constraint (his subservient satellite constraint (p. 190)) will still not apply; as (49c) shows, the NP in the position of the deletee does not have to be coreferential to the controller. That the deletion of the subject

of an intention predicate or animate adjunct to a possibility predicate is a deletion under identity rather than a free deletion is shown by the examples in (50). If it were a free deletion, we would expect there to be no kind of intervention constraint, and that (50 b,d) would be grammatical, but they are not:

- 50a. John bought a mirror which I intended for me to admire myself in.
- 50b. \*John bought a mirror to admire myself in.
- 50c. Susan bought a bagel which it would be possible for you to cut your teeth on.
- 50d. \*Susan bought a bagel to cut your teeth on. (non-generic)

The 'x intend'-deletion rule is thus deletion under identity, into an island, and as examples like (51) show, it is deletion over a variable--the very problem we set out to solve.

- 51. Sue knew that it was clear that it would be legal to have a book which [ ] it was obvious it would be gauche [ ] to amuse herself with.

Section 3. Perhaps the most striking property of this construction is its similarity to a relative clause construction, as evident in (3,7, etc.). Indeed, as Ross noted (1967:Sec 6.1.1.3), despite its peculiarities, this construction shares several properties with ordinary relative clauses. As demonstrated above, the NP coreferential to the head NP can be pulled or deleted from indefinitely far away. Although the relative pronouns must be deleted in this construction if they refer to the direct object of the highest verb in the 'relative clause' (as in (52)), or if they refer to the object of a preposition which is not pied piped<sup>10</sup> (as in (53)), if the head noun refers to an adjunct to some verb other than that of the highest S in the "relative" clause, the AD clause, like a relative clause, may begin with which, who(m), that or nothing, as (54) and (55) show, and if pied piping occurs in any clause, who(m) and which, but not that occur, again parallel to true relative clauses, as (56) and (57) show.

- 52a. John brought an apple to eat.
  - 52b. \*John brought an apple which to eat.
  - 52c. John brought an apple for Bill to eat.
  - 52d. \*John brought an apple which for Bill to eat.
- 
- 53a. John brought a toy to amuse himself with.
  - 53b. \*John brought a toy which to amuse himself with.
  - 53c. John brought a toy for me to amuse myself with.
  - 53d. \*John brought a toy which for me to amuse myself with.
- 
- 54a. John brought a book which it would be fun to read
  - 54b. John brought a book which it would be fun to look at.
  - 54c. John brought a man who(m) it would be good for us to know.
  - 54d. John brought a toy that it would be easy to amuse himself with.
  - 54e. John brought a toy it would be easy to amuse himself with.
- 
- 55a. John brought a book which he had read.
  - 55b. John brought a book which he had never looked at.
  - 55c. John brought a man whom he had met.
  - 55d. John brought a toy that he didn't want.
  - 55e. John brought a toy he didn't want.
- 
- 56a. John brought a toy with which it would be easy to amuse himself.
  - 56b. John brought a woman with whom it would be good (for us) to study.
  - 56c. \*John brought a toy with that it would be easy to amuse himself.
  - 56d. \*John brought a toy with it would be easy to amuse himself.
- 
- 57a. John brought a toy with which I had amused myself.
  - 57b. John brought a woman with whom he wanted (us) to study.
  - 57c. \*John brought a toy with that he had amused himself.
  - 57d. \*John brought a toy with he had amused himself.

For some reason which I don't understand, relative pronouns pied piped from the end of the highest clause of the relative clause without leaving some surface clause adjunct behind are much worse than similar pied piping in a true relative clause. Thus, (58a,b) are worse than (59a,b), and also worse than (60a), a true relative clause, and (60b), where, parallel to (56b), the pied piping has been from a lower clause.

58a. I need a man in whom to confide.

58b. I want a book with which to amuse myself.

59a. I need a man in whom to confide my troubles.

59b. I want a book with which to amuse myself after you leave.

60a. I need a man in whom I can confide.

60b. I need a man in whom it will be easy to confide.

Furthermore, as (61) shows, Pied piping is (totally mysteriously) blocked from applying in the highest S of the 'relative clause' if the subject is not deleted.

61a. John brought a toy to amuse himself with.

61b. John brought a toy with which to amuse himself.

61c. John brought a toy for me to amuse myself with.

61d. \*John brought a toy with which for me to amuse myself.

61e. \*John brought a toy with which for Bill to play.

61f. John brought a toy with which it would be fun for me to amuse myself.

As with true relative clauses, 'head nouns' in this construction as well as prepositions pied pipe. Thus (62) is parallel to (63).

62a. I bought a book the cover of which it should be easy to express myself on.

62b. I bought a book the cover of which it should be easy for Bill to restore.

62c. I bought a book the cover of which (\*for one) to decorate with crayons.



63a. I bought a book the cover of which Bill said John restored.

63b. I bought a book the cover of which I liked.

As with pied piping of prepositions, there is, however, a mysterious restriction that if pied piping occurs in the highest clause of the 'relative' clauses it may not leave a 'hole' at the end of the (surface counterpart of the) clause from which the NP was moved. Thus, sentences (62a,b) where the pied piping is from a lower clause, and sentences (62c) and (64) where it is from the highest clause, but doesn't leave a hole, are better by far than the sentences of (65), where the pied piping is from the highest clause in the 'relative clause' and leaves a hole at the end of the clause.

64. I bought a book the cover of which (\*for one) to restore tonight.

65a. ??I bought a book the cover of which to restore.

65b. ??I bought a book the cover of which to express myself on.

A third feature of these putative relative clauses which involves a difference in their syntax when the WH-coreferential NP (the relative pronoun) is in the highest clause under the head is the definiteness of the head NP. In ordinary relative clauses as in (66), it is immaterial whether the head is definite or indefinite, and depth of embedding of the WH-coreferential NP is irrelevant.

66a. John met a boy who Mary likes.

66b. John met the boy who Mary likes.

66c. John met a boy who it's possible Mary will like.

66d. John met the boy who Bill says Mary likes.

In these putative relative clauses, however, the head must be indefinite if the WH-coreferential NP is in the highest clause of the 'relative clause,' as demonstrated by the difference between the sentences of (67) and those of (68).

67a. I bought a toy to amuse myself with.

67b. I bought a chair (for Bill) to restore.

68a. \*I bought the toy to amuse myself with.

68b. \*I bought the chair (for Bill) to restore.

As the sentences of (69) show, definiteness is irrelevant if the WH-coreferential NP is more deeply embedded.

69a. I bought a chair which it will be necessary (for Bill) to restore.

69b. I bought the chair which it will be necessary (for Bill) to restore.

Probably the most striking difference between true relative clauses and these relative-clause-like constructions is that while in true relative clauses, the relative pronoun can originate as a subject at any depth of embedding as in (70), the relative pronoun in these similar structures cannot have been moved from subject position, as (71) shows.

70a. I know a boy who likes Dali.

70b. I know a boy who Bill says likes Dali.

70c. I know a boy who it is obvious Bill thinks likes Dali.

71a. \*Mary hired [a boy to draw a picture of himself].

71b. \*Mary hired a boy who it would be easy (for him) to draw a picture of himself.

71c. ?\*Mary hired a man for whom it would be easy to teach me Sanskrit.

71d. \*Mary hired a man for whom it's possible to teach me Sanskrit.

It is true that there are sentences like (72), where

72. I hired a man to teach me Sanskrit.

a man refers to the object of hired as well as the underlying subject of teach. However, there is no reason to suppose that (72) is not a sentence with an ordinary relative clause which has undergone WH-be deletion. That is, there is no reason not to claim that (72) is derived from a structure similar to (73), which has suffered the same deletion of a relative pronoun and a form of be that applies to derive such constructions as (74).

73. I hired a man who <sup>is</sup> <sub>{ was }</sub> to teach me Sanskrit.

74a. The man presumed to be killed in the plane crash was from Louisiana.

74b. The man peeking in the window needs glasses.

74c. John wants someone tall for the part.

Notice that (72) and (73) involve the "modal" be to. Like other modals, it has no infinitive form, and could not occur in a structure like (71c,d).

75a. \*Mary expects Bill to be to teach Sanskrit.

75b. \*Mary hired a man who it's possible (for) to be to teach me Sanskrit.

75c. \*Mary hired a man for whom it's possible to be to teach me Sanskrit.

These putative relative clauses are, however, subject to the CSC, and CNPC, and the SSC, exactly as are true relative clauses, as the ungrammatical sentences in (76) show.

76a. \*John mentioned some toys which it will easy (for him) to amuse himself with and games.

76b. \*John mentioned some toys which it will be easy (for him) to amuse himself with and for everyone to have a good time.

76c. \*I brought some toys which the girl who said it would be easy to amuse myself with liked.

76d. \*I brought some toys which John rejected the notion it would be easy (for me) to amuse myself with.

76e. \*I brought some toys which it's possible (that) (for me) to amuse myself with would be easy.

76f. I brought some toys which it's possible it would be easy (for me) to amuse myself with.

Further similarities between these putative relative clauses and true relative clauses involve the covert definiteness of the coreferential NP (the relative pronoun) as discussed by Morgan (1972). He points out that even when the head NP is definite, the coreferential NP is indefinite, as evidenced by various co-occurrence restrictions concerning definite and indefinite NPs. Tough-movement moves only definite NP, as the ungrammaticality of (77c) testifies. Yet both true relative clauses and these putative relative clauses on indefinite heads permit tough-movement:

77a. I bought a book which will be hard to put down.

77b. I bought a book which will be hard to tear myself away from.

77c. \*A book which I bought was hard to put down.

Morgan's evidence from there-insertion, intensive reflexives, and the non-occurrence of stative predicates with indefinite subjects is not relevant

because it refers to subjects<sup>11</sup>, and the construction in question does not permit subjects to be 'relativized'.

In summary, the clause from which AD deletes the subject when identical to a commanding NP has all of the surface characteristics of a relative clause: it begins with who(m), which, that or no pronoun, there is nothing in the slot for the constituent which the relative pronoun refers to, and there is evidence of pied piping of both pronouns and noun phrases. It is subject to Ross constraints in exactly the ways true relative clauses are, and despite its differentiating characteristic that the head noun must be indefinite, as with true relative clauses the embedded coreferential NP (the one which shows up as a relative pronoun) must be definite. Nonetheless, the formation of these relative-like clauses is subject to restrictions on pied piping and definiteness when the coreferential NP originates in the highest clause in the 'relative' clause which do not hold for true relative clauses. Also, unlike true relative clauses, in these relative-like clauses the relative pronoun must not have been moved from subject position. Is it simply a strange coincidence that AD deletes only subjects? AD is optional for deeply embedded clauses, but this is exactly where the violation is clearest (cf. (71b-d), and whether or not AD applies is irrelevant to it, so the answer can't be that AD removes the environment from this relative clause formation.

Of course, it is not surprising that these relative-like clauses don't behave exactly like true relative clauses--logically they are more than just relative clauses. They contain some reference to an intention of the commanding subject NP with respect to the relativized NP. Ideally we would be able to determine how aspects of this difference, reflected in the underlying structure of this construction, would predict the anomalous WH-movement behavior as well as the anomalous deletion behavior. Unfortunately no such analysis falls easily out of these properties.



Section 4: Conclusion. What we are left with is an identity deletion rule which operates forwards and backwards over a variable and into complex NP islands of a certain type. This is in accordance with Ross' (1967) claim that rules which delete bi-directionally will fail to obey island constraints as well as with Grosu's claim. However this rule is constrained strictly by the SSC and one clause of the CSC, and to my knowledge, neither Ross' recent (1971b) work on variables, nor Grosu's work on the strategic nature of island constraints, predicts such a distribution. This rule shares all of these properties with SuperEqui, and would easily be considered a subcase of SE, but for the various conditions on it, and the fact that in a few respects it is not constrained by conditions constraining SE (e.g. the IC) and vice versa.

Second, the evidence sketched in Section 3 indicates that the interaction of AD with relative clause formation requires eight or so special conditions, of which four or more are global, and three refer to the type of structure to which AD applies; of these three, two hold regardless of whether AD actually applies, or even can apply. Third, taking AD and the relative clause rules together, out of a total of 11 or so conditions constraining application, four refer to a distinction between highest clause in the island and lower clauses, and all of these can be thought of<sup>12</sup> as describing conditions or operations that are obligatory for highest clauses and optional for lower clauses; so not only does SE have this property, AD has it, and all three aspects of relative clause formation (movement, deletion, and occurrence of that have it.

This collection of conditions, some of them with conditions on them, reads like a linguist's nightmare. They deserve an explanation, and unfortunately I have none to offer. What I would like to do however, is make explicit some of the consequences of simply claiming that AD is merely SE applying into a relative clause.

First of all, this claim offers no insight into the fact that when AD applies into the highest clause of a relative clause as in (1b-d), the result is a sentence which, like those resulting from Equi, is relatively simple perceptually, yet application of SE into object complements (as in (8b)) generally yields a relatively sophisticated and complex sentence.

8b. I know Mary will think it is unnecessary to kill herself.

Second, it fails to explain why the IC should fail to hold for AD structures, even though it generally holds for SE into relative clause islands, for those speakers for whom it is strong (cf. (20)).

Third, it fails to explain why SE but not AD can violate the CNPC twice in a construction (cf. (22,23)).

Fourth, the claim that AD is simply a case of SE fails to predict that SE, which is usually optional, is obligatory into the highest clause of a relative clause. If some principle could be adduced which would make AD into a highest clause (call it AD<sub>1</sub>) a subcase of Equi, which is usually obligatory, rather than of SE, then it is quite mysterious why Equi should be governed (by verbs dealing with mental attitudes toward actions e.g., want, try, intend..., but not \*assert or \*realize) and SE ungoverned,<sup>13</sup> while AD<sub>1</sub> and AD<sub>n</sub> are "governed" by the same wide class of seemingly diverse predicates (e.g., accept, bring, buy, catch, deserve, find, get, have, ignore, know about, make, need, own, refuse, talk about, want, win..., but not \*break, \*drop, \*throw away...). For that matter, it is exceedingly curious that backwards Equi doesn't seem to be governed<sup>14</sup> and is optional whereas forwards Equi is obligatory. The only other alternative that occurs to me that could make a reasonable generalization about the relationship between obligatory application and highest clauses would be to say that this is a property that inheres in environments (like islandhood), rather than in rules as Ross appears to be claiming in recent work on the notion of primacy.

Fifth, claiming that SE and AD are the same rule requires mentioning in the SD of SE the structural requirements for forward and backward AD since the notion of highest clause in the relative clause is important for AD, but

such a structural description totally obscures the great generality that otherwise pertains for SE, as demonstrated in Section 3. (See the Appendix for an attempt at stating some of the details of the structural description and conditions for application of AD. Obviously, somehow attributing the obligatory/optional distinction to environments rather than rules would mitigate this difficulty.

Finally, collapsing AD with SE makes it impossible to refer to (much less explain) the global conditions which AD imposes on relative clause formation and the indefiniteness condition in any principled way, since, as a comparison of (52-69) with (78) shows, SE generally does not impose such conditions.

- 78a. John thought that it would be easy (for him) to defend himself with a/the boomerang which/that/Ø he made.
- 78b. A/the boomerang which/that/Ø John thought it would be easy (for him) to defend himself with...
- 78c. John tried to defend himself with a/the boomerang which/that/Ø he made.
- 78d. A/the boomerang which/that/Ø John tried to defend himself with...

Someday one may indeed be able to show that SE and AD are the same rule, but before that day comes, it seems to me that there will have to be a(nother) major revision in our view of rule environments. The fact of differential application in immediately commanded clauses and from more remotely commanded clauses will have to be stated not as part of the structural description of particular rules, or even as comments on them, but, like Ross' constraints, on variables, as conditions on environments in certain types of rules.

#### NOTES

<sup>1</sup>Whether or not others may be included, and who they may be is an interesting problem in its own right, but far beyond the scope of the present study. The question is taken up in Green (forthcoming).

<sup>2</sup>Kimball (1971) has made an appealing case for considering Super-Equi (SE) to be really two sequential processes, Equi and the deletion of the controlling dative NP. Grinder (1971) points out some obstacles for this view, however, and it is worth noticing that in any case, the dative deletion is deletion over a variable, as shown by (a) and deletion under identity, as shown by (b). Although, as Kimball argues (see also Postal(to appear)), possible may take a dative argument in addition to its sentential argument (but only when it has a (subjectless) infinitive complement--cf. (a) and (c)), it cannot do so in sentences like (a). The controller for the deletion of necessary's dative must be the subject of thought.

- a. John<sub>i</sub> thought about the possibility (\*for him<sub>i</sub>) of it being necessary [for<sup>i</sup> Doom<sub>i</sub>] to kill himself<sub>i</sub>.
- b. \*John<sub>i</sub> thought about the possibility of it being necessary [for Doom<sub>j</sub>] to kill herself<sub>j</sub>.
- c. \*It is possible for you that it may rain.

<sup>3</sup>Grinder did not, however, discuss the fact that Equi is obligatory and governed (although with want and expect and certain assumptions about control and coreference, sentences like (a) and (b) are possible), while SE is optional and ungoverned, which may pose an obstacle to his claim that Equi is a structurally defined subcase of SE, in addition to those discussed by Kimball and Neubauer (1972).

- a. I expect myself to fall.
- b. I want me to win.

See Morgan (1970) for commentary on these exceptional cases.

<sup>4</sup>Ross notes that it is a "total mystery" to him why unidirectional controlled deletions should obey the constraint but not bi-directional deletions.

If this distinction is a valid distinguishing principle, it means one is forced to reject certain of Neubauer's (1970) arguments that chopping cannot be considered to be copying and deletion. Neubauer makes this claim largely



on the grounds that three deletion rules (Super Equi, Sluicing (cf. Ross 1969) and a VP-deleting rule he calls Ludwig) do not obey the CNPC and the CSC. However, since as the following sentences show, these rules delete backwards into clauses subordinate to the clauses containing their antecedents, as well as forwards, they should not be expected to obey the constraints.

- ia. It frustrated Sam that exhibiting himself in public was illegal.
- ib. That exhibiting himself in public was illegal frustrated Sam.
- ic. \*That exhibiting himself in public was illegal means that Sam is a criminal.
- iiia. John is dancing somewhere, although I don't know where.
- iiib. Although I don't know where, John is dancing somewhere.
- iiic. \*I don't know where, although John is dancing somewhere.
- iiia. I'm sure someone can swim the English Channel, although I can't.
- iiib. Although I can't, I'm sure someone can swim the English Channel.
- iiic. \*I can't, although I'm sure someone can swim the English Channel.

Interestingly, Ross noticed the deletion involved in sentences like (1) (cf. his 6.16-6.21). However, he was interested mainly in the relative clause-like properties (to be described below) of such constructions, and did not explore in detail the conditions under which the subjects of these subordinate clauses could be deleted.

<sup>5</sup>It is interesting to observe that sentences like (a,b) with verbs which may (cf. Akatsuka 1972) take sentential subjects, are much better than (12a,d), apparently because it is possible (and probably necessary) to reconstruct a source with a preceding and commanding controller (as in (c,d)) which is deleted in the course of the derivation by backwards Equi, as in (e,f).

- a. A puzzle to amuse himself with always pleases John.
- b. A puzzle to play with excited John.
- c. John's getting a puzzle to amuse himself with always pleases John.
- d. John's seeing a puzzle to play with excited John.
- e. Getting a puzzle to amuse himself with always pleases John.
- f. Seeing a puzzle to play with excited John.

I am not at present prepared to say whether the relevance of this possibility of reconstructing an otherwise possible source reflects 1) the set of possible underlying structures for the sentence in question, 2) a need for a transderivational constraint, 3) the need for interpretive rules, or 4) something else.

<sup>6</sup>The LBC, which forbids the chopping of a leftmost NP branch of a larger NP, may not be violated either, as the following sentences show.

- ia. John brought a chair for his wife to sit on.
- ib. \*John brought a chair (for) 's wife to sit on.
- ic. \*John brought a chair wife to sit on.
- id. \*John brought a chair for wife to sit on.

Regardless of whether Ross' formulation of the constraint as a constraint on chopping left branches is correct, I suspect that whatever it is that accounts for the ungrammaticality of (iib) and iic) below also accounts for the ungrammaticality of (ib-d).

- ia. Sue bought John's book.
- iib. \*Who did Sue buy 's book?
- iic. \*Whose did Sue buy book?
- iid. Whose book did Sue buy?

<sup>7</sup>This is evidence that the notion 'possible controller' is more than transderivational: if the NP intervening in controller position is not referential, Grinder's Intervention Constraint fails to hold.

- a. Sandy and Max got a letter that said that trying to improve themselves would be a waste of time.
  - b. \*Those books say that it will be necessary [for them] to be read aloud.
  - c. \*John met a girl who said that it might be difficult to blink his eyes.
- Sentence (a), where the intervening NP is inanimate, and as shown by (b) incapable of being a controller for SE, contrasts with the ungrammatical (c) where the intervening NP, a girl, could control a deletion. Similarly for

the non-referential NP one in (d) (cf. c) and the abstract (sentential) and non-referential NP extent in (e).

- d. We said one couldn't prove that it would be difficult to defend ourselves.
- e. Joan bought a book that one could read to learn if the extent of the invasion entailed that it would be futile to try to defend himself.

If an NP is non-referential, it does not make sense to speak of some other NP as being co-referential to it.

<sup>8</sup>The IC is not as strong for me as for Grinder, so that judgements in (25) and (26) are those of informants for whom Grinder's version of the IC holds. For me, the sentences of (25) and (26) are equally good.

<sup>9</sup>Lakoff chose an abstract verb with the meaning of 'designate' on the basis of her observations that such verbs (appoint, choose, designate) have an appropriate meaning, and like relative purpose clauses and AD-constructions, do not permit clauses with negated main verbs to be embedded beneath them:

\*They appointed Arthur not to shoot the Easter Bunny. (208)

However, the meaning of such verbs involves reference to an explicit act of selection which is not required in the construction at issue. Verbs with the meaning of intend, expect, or hope, which all, like the 'designate'-verbs, require a sentient subject seem more appropriate semantically to the relative purpose infinitive in English, despite the fact that they do permit negative clauses as complements, and relative purpose infinitives may not be negative.

<sup>10</sup>I am deliberately inexplicit as to whether this is a global condition referring to subsequent deletion or one referring to previous deletion.

<sup>11</sup>For no obvious reason, relative pronouns can have intensive reflexives only if they refer to subjects. Thus:

- a. Mary met a/the man who himself supports the liberation of women.
- b. \*Joan was captivated by a/the friend who(m)/which himself Mary brought.

<sup>12</sup> Whether the rule concerning the appearance of that is obligatory in highest or lowest clauses depends on whether it is formulated as an insertion or a deletion rule. If it is a deletion rule, it is obligatory in highest clauses if they are infinitive clauses.

<sup>13</sup> Actually both AD and SE are blocked by predicates like predestined, preferred etc. in the 'variable':

- a. John bought a chair which (it was obvious that) it would be  
     { preferred } { /for him }      to paint by himself.  
     { preordained } { \* $\emptyset$  }
- b. John thought that (it was obvious that) it was preordained { for him }  
     to be chess champion of the world.                                      { \* $\emptyset$  }

but this is the closest SE comes to being governed, as far as I know.

<sup>14</sup> A similar situation obtains with subject raising, with distinct classes of verbs triggering raising into subject position and raising into object position. This raises the question of whether this is really a single rule rather than two (or more) rules.



## Appendix: Stating AD

A statement of AD in the usual notational system would look roughly like the following:

## I. Forwards

X	NP <sub>i</sub>	Y	[ <sub>np</sub>	NP <sub>j</sub>	[ <sub>s</sub>	Z	[ <sub>s</sub>	NP <sub>i</sub>	W]	Q]]	R
1	2	3		4		5		6	7	8	9
→	1	2	3	4		5		∅	7	8	9

OBLIGATORY if Z is null

OPTIONAL otherwise

Condition: a) 2 must command 6

## II. Backwards

X	[ <sub>np</sub>	NP <sub>j</sub>	[ <sub>s</sub>	Z	[ <sub>s</sub>	NP <sub>i</sub>	W]	Y]]	Q	NP <sub>i</sub>	R
1		2		3		4	5	6	7	8	9
→	1		2	3		∅	5	6	7	8	9

Conditions: ill-understood, but 8 need not command 4

Other conditions: b) NP<sub>i</sub> must refer to a sentient being.

c) If Z is null, W must not contain an overt negative.

d) If Z is null, NP<sub>j</sub> must be indefinite

e) Intervention Constraint does not always hold.

The above formulations assume SVO order, but assuming VSO order at the time of application doesn't reduce the need for a double structural description. Notice also that 'conditions' (b),(c) and (d) are well-formedness conditions on the input tree per se; they hold even if the rule does not apply. Indeed, (c) and (d) hold even if it cannot apply, i.e. if the identity condition is not met.

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SYNTACTIC ANALOGY AND BACKWARD PRONOMINALIZATION\*

Peter Cole

In this paper I shall present evidence that analogy has played a significant role in the generalization of a syntactic constraint. The existence of analogical processes in syntax has considerable theoretical import. Analogy explains how semantically motivated syntactic regularities may become generalized, and hence lose their semantic motivation. Although analogy is often difficult to falsify on language internal grounds, I show that when analogy has the effect of extending a semantically based process, it is possible to make predictions regarding other languages which have the same or similar semantically based property, but which lack independent motivation for analogy. In such cases it would be expected that the property in question would not be generalized. This methodology allows the formulation of empirically falsifiable hypotheses dealing with analogy in syntax.

The constraint which I shall examine in some detail is the ban against backward pronominalization with indefinite antecedents. In superficial structures of the form of (1), there cannot be a relation of coreference between PRO and NP, where PRO is a personal pronoun and NP is indefinite.

(1) [X PRO Y NP Z]

Many, though perhaps not all, languages possess some form of this constraint. The psychological motivation for the constraint seems to be that speakers understand personal pronouns to be definite when they appear in isolation: that is, when they do not follow an antecedent. Thus, when the pronoun precedes its antecedent, a supposition that there is a definite referent exists. When a pronoun follows its antecedent, no such supposition is occasioned. Under these circumstances the pronoun takes on the definiteness of its antecedent.

The backward pronominalization constraint (BPC) holds in some form in all the languages I have looked at: Mandarin, South Min, Korean, Yoruba, Hebrew, German, French, English, Spanish and Italian. There are interesting problems connected with defining BPC in English, French, Spanish and Italian.

Subject pronouns are normally deleted in Spanish and Italian. BPC does not apply in these cases, thereby limiting the domain of the constraint severely. I shall discuss the constraint in English and French shortly. Some examples of BPC follow.

#### MANDARIN

- (2) Meige ganqinjia (dang ta<sub>i</sub>) tan qin de shihou xihuan changege.  
 every pianist at he play piano RM time like sing  
 'Every pianist<sub>i</sub>, when he<sub>i</sub> plays the piano, likes to sing.'
- (3) Meige xuesheng<sub>i</sub> chi fan de shihou (tamen)<sub>i</sub> dou bu jianghua.  
 every student eat rice RM time they whenever not talk  
 'When every student<sub>i</sub> eats a meal, he<sub>i</sub> doesn't talk.'
- (4) \*Ta<sub>i</sub> lai de shihou meige xuesheng<sub>i</sub> nazhe (ta) ziji de shu.  
 he come RM time every student hold he self PM book  
 '\*When he<sub>i</sub> came, every student<sub>i</sub> was holding his book.'
- (5) \*Ta<sub>i</sub> dang meige ganqinjia<sub>i</sub> tan qin de shihou dou changege.  
 he at every pianist play piano RM time whenever sing  
 '\*He<sub>i</sub>, when every pianist<sub>i</sub> plays the piano, sings.'
- (6) \*Ta<sub>i</sub> taitai sile yihou shide shei<sub>i</sub> hen jimo?  
 he wife die AM after make who very lonely  
 '\*Who<sub>i</sub> did his<sub>i</sub> wife's death make very lonely?'

#### SOUTH MIN (TAINAN DIALECT)

- (7) Muijile imgakka<sub>i</sub> (i<sub>i</sub>) te tua khim e si ai chiokua  
 every musician he at play piano RM time love sing  
 'Every musician<sub>i</sub>, when he<sub>i</sub> plays the piano, loves to sing.'
- (8) Muijile imgakka<sub>i</sub> te tua khim e sijun i<sub>i</sub> tio chiokua  
 every musician at play piano RM time he then sing  
 'When every musician<sub>i</sub> plays the piano, he<sub>i</sub> sings.'
- (9) \*I<sub>i</sub> te tua khim e sijun muijile imgakka<sub>i</sub> tio chiokua.  
 he at play piano RM time every musician then sing  
 '\*When he<sub>i</sub> plays the piano, every musician<sub>i</sub> sings.'



- (10) \*I<sub>i</sub> muijite imgakka te tua khim e sijun tio chiokua.  
 he every musician at play piano RM time then sing  
 '\*He<sub>i</sub>, when every musician<sub>i</sub> plays the piano, sings.'
- (11) \*In<sub>i</sub> bo si liau ho siang<sub>i</sub> jin siongsim?  
 he wife die after make who very sad  
 '\*Who<sub>i</sub> did his<sub>i</sub> wife's death make very sad?

## KOREAN

- (12) \*Caki-til-i<sub>i</sub> ilena- myen ai-til-mata<sub>i</sub> hakyoe-e kanta.  
 \*Ki-til-i<sub>i</sub>  
 self PL SUB get up when boy PL each school go  
 they  
 '\*When he<sub>i</sub> gets up, each boy<sub>i</sub> goes to school.'
- (13) Ai-til-mada<sub>i</sub> ilena-myen caki-til-i<sub>i</sub> hakyoe-e kanta.  
 ki-til-in<sub>i</sub>  
 boy PL each get up when self PL SUB school go  
 they  
 'When each boy<sub>i</sub> gets up, he<sub>i</sub> goes to school.'
- (14) \*Caki-ka<sub>i</sub> aphita-nin sasil-i nuku-ril<sub>i</sub> nollake haetni?  
 self sick fact who surprised  
 '\*Who<sub>i</sub> did the fact that he<sub>i</sub> was sick surprise?

## YORUBA (tone omitted)

- (15) Ni ipba ti eni kqkan ninu ijoko<sub>i</sub> dide, wq n lq si ile.  
 in time when each one of the committee get up they go to home.  
 'When each member of the committee<sub>i</sub> gets up, he<sub>i</sub> goes home.'
- (16) Eni kqkan ninu ijoko lq si ile ni ipba ti wq n<sub>i</sub> dide.  
 each one of the committee goes to home in time that they get up  
 'Each member of the committee<sub>i</sub> goes home when he<sub>i</sub> gets up.'
- (17) ???Ni ipba ti wq n<sub>i</sub> dide, oni kqkan ninu ijoko<sub>i</sub> lq si ile.  
 in time when they get up each one of the committee go home  
 '\*When he<sub>i</sub> gets up, each member of the committee<sub>i</sub> goes home.'

- (18) ?????Wq<sub>i</sub> lq si ile ni iḡba ti eni kqkan ninu ijoko<sub>i</sub>.  
 they go to home in time that each member of the committee  
 get up

'\*He<sub>i</sub> goes home when each member of the committee<sub>i</sub> gets up.'

- (19) \*Tani<sub>i</sub> ʔsun be o<sub>i</sub> jə ʔlʔtan jə loju?  
 who the claim that he be fraud surprise  
 '\*Who<sub>i</sub> did the claim that he<sub>i</sub> was a fraud surprise?

# HEBREW

- (20) Kol exad<sub>i</sub> keṣe hu<sub>i</sub> kam carix leṣafṣef et haṣinaim.  
 all one when he gets up must rub ACCUSATIVE the teeth  
 'Everyone<sub>i</sub>, when he<sub>i</sub> gets up, has to brush his teeth.'
- (21) Keṣe kol exad<sub>i</sub> kam, hu<sub>i</sub> carix leṣafṣef et haṣinaim.  
 when all one gets up he must rub ACCUSATIVE the teeth  
 'When anyone<sub>i</sub> gets up, he<sub>i</sub> has to brush his teeth.'
- (22) \*Hu<sub>i</sub>, keṣe kol exad<sub>i</sub> kam, carix leṣafṣef et haṣinaim.  
 he when all one gets up must rub ACCUSATIVE the teeth  
 '\*He<sub>i</sub>, when everyone<sub>i</sub> gets up, has to brush his teeth.'
- (23) \*Keṣe hu<sub>i</sub> kam, kol exad<sub>i</sub> carix leṣafṣef et haṣinaim.  
 when he gets up all one must rub ACCUSATIVE the teeth  
 '\*When he<sub>i</sub> gets up, everyone<sub>i</sub> has to brush his teeth.'
- (24) \*Et mi<sub>i</sub> haṣmua ṣe hu<sub>i</sub> haya meragel hiftia?  
 ACCUSATIVE who the rumor that he was spy surprised  
 '\*Who<sub>i</sub> did the rumor that he<sub>i</sub> was a spy surprise?'

# GERMAN

- (25) Wenn jemand<sub>i</sub> gekommen wäre, hätte er<sub>i</sub> mich gesehen.  
 if someone come had had he me seen  
 'If someone<sub>i</sub> had come, he<sub>i</sub> would have seen me.'
- (26) \*Wenn er<sub>i</sub> gekommen wäre, hätte mich jemand<sub>i</sub> gesehen.  
 if he come had had me someone seen  
 '\*If he<sub>i</sub> had come, someone<sub>i</sub> would have seen me.'

- (27) a. Wen<sub>i</sub> hätte der Gedanke überrascht, dass er<sub>i</sub> gestern abend  
 who had the thought surprised that he yesterday evening  
 geheiratet hat?  
 married had  
 'Who<sub>i</sub> did the thought surprise that he<sub>i</sub> had married yesterday  
 evening?
- b. \*Wen<sub>i</sub> hätte der Gedanke dass er<sub>i</sub> gestern abend geheiratet  
 who had the thought that he yesterday evening married  
 hat überrascht?  
 had surprised  
 '\*Who<sub>i</sub> did the thought that he<sub>i</sub> had married yesterday evening  
 surprise?'

## ITALIAN

- (28) Quando uno<sub>i</sub> arriva a Roma, [Ø<sub>i</sub>] ha bisogno di trovarsi<sub>i</sub> una casa.  
 'When one<sub>i</sub> arrives in Rome, [he<sub>i</sub>] needs to find a house.'
- (29) Quando [Ø<sub>i</sub>] arriva a Roma, uno<sub>i</sub> ha bisogno di trovarsi<sub>i</sub> una casa.  
 '\*When [he<sub>i</sub>] arrives in Rome, one<sub>i</sub> needs to find a house.'
- (30) \*Quando uno<sub>i</sub> arriva a Roma, lui<sub>i</sub> ha bisogno di trovarsi<sub>i</sub> una casa.  
 'When one<sub>i</sub> arrives in Rome, he<sub>i</sub> needs to find a house.'
- (31) \*Quando lui<sub>i</sub> arriva a Roma, uno<sub>i</sub> ha bisogno di trovarsi<sub>i</sub> una casa.  
 'When he<sub>i</sub> arrives in Rome, one<sub>i</sub> needs to find a house.'

## SPANISH

- (32) Cuando uno<sub>i</sub> llega a Madrid, [Ø<sub>i</sub>] debe buscar una casa.  
 'When one<sub>i</sub> arrives in Madrid, [he<sub>i</sub>] must look for a house.'
- (33) Cuando [Ø<sub>i</sub>] llega a Madrid, uno<sub>i</sub> debe buscar una casa.  
 '\*When [he<sub>i</sub>] arrives in Madrid, one<sub>i</sub> must look for a house.'
- (34) Cuando uno<sub>i</sub> llega a Madrid, el<sub>i</sub> debe buscar una casa.  
 'When one<sub>i</sub> arrives in Madrid, he<sub>i</sub> must look for a house.'
- (35) \*Cuando el<sub>i</sub> llega a Madrid, uno<sub>i</sub> debe buscar una casa.  
 '\*When he<sub>i</sub> arrives in Madrid, one<sub>i</sub> must look for a house.'

(36) A1 [ $\emptyset_i$ ] llegar a Madrid, uno<sub>i</sub> debe buscar una casa.

'Upon [ $\emptyset_i$ ] arriving in Madrid, one<sub>i</sub> must look for a house.'

The backward pronominalization constraint holds for quantified and interrogative antecedents in the languages examined. The paradigm for BPC in English differs somewhat from that exemplified in (2)-(27). (37)-(39) shows the pattern of grammaticality for many (though not all) speakers of English.<sup>1</sup>

(37) a. Each boy<sub>i</sub> goes to school when he<sub>i</sub> gets up.

b. \*When he<sub>i</sub> gets up, each boy<sub>i</sub> goes to school.

c. \*He<sub>i</sub> goes to school when each boy<sub>i</sub> gets up.

d. When each boy<sub>i</sub> gets up, he<sub>i</sub> goes to school.

(38) a. Who<sub>i</sub> is surprised by the claim that he<sub>i</sub> is a fraud?

b. \*Who<sub>i</sub> does the claim that he<sub>i</sub> is a fraud surprise?

(39) a. This is the man<sub>i</sub> who<sub>i</sub> was surprised by the fact that he<sub>i</sub> had cancer.

b. \*This is the man<sub>i</sub> who<sub>i</sub> the fact that he<sub>i</sub> had cancer surprised.

The sentences of (37) and (38) follow the pattern of (2)-(27). The ungrammaticality of these sentences is explicable on the basis of a general constraint against backward pronominalization with indefinite antecedents. The ungrammaticality of (39b) is not explicable on this basis. The relative wh form is definite, as is shown by (40)-(42).

(40) The boss himself loses his temper.

(41) \*A boss himself loses his temper.

(42) A boss who himself loses his temper should not criticize employees for doing so.

(The use of emphatic reflexives as a test for definiteness was first mentioned in Leskosky 1972.) The ungrammaticality of (39b) requires an explanation.

Some facts noted by Schwartz (1971) suggest why (39b) should be ungrammatical. On the basis of a comparison of relativization of wh question formation in a number of languages, Schwartz proposed that many of the properties of relative clauses in languages having the equivalent of wh nominals in these clauses are imitative of those of wh questions. Extending



Schwartz's proposal to sentences like (39b), the ungrammaticality of these sentences is explicable as a case of analogy in syntax. That is, I claim that the morphological similarities between wh forms in questions and relative clauses causes the speaker to consider all wh forms to be a natural class. Consequently, BPC is extended to wh forms in relative clauses.

The analogical explanation of the ungrammaticality of (39b) cannot be tested on the basis of evidence internal to English. The hypothesis is falsifiable, however, because it makes certain cross linguistic predictions. First, if (39b) is ungrammatical in English because of the similarity between relative and interrogative morphemes, it is expected that sentences equivalent to (39b) will be found to be grammatical in languages in which wh question formation and relativization are not closely related processes. Second, in languages where the two processes are closely related, there should be at least a tendency for BPC to be extended to the equivalent of (39b). I shall now present evidence that both predictions are correct.

Mandarin, South Min, Korean, Yoruba, Hebrew and German are languages in which wh question formation and relative clause formation are dissimilar. In Mandarin, South Min and Korean, relative clauses are marked by relative markers and precede the head noun phrase. Questioned nominals are marked by interrogative morphemes. There is no rule of wh movement in these languages. In Hebrew and Yoruba relativization involves deletion or pronominalization of the relativized NP, but wh question formation is a movement rule. Although both relativization and wh question formation are movement rules in German, the sets of relative and interrogative morphemes are disjunct. The analogical hypothesis predicts that BPC will not hold for relativized noun phrases in these languages. Sentences (43)-(48) show that this prediction is correct.

#### MANDARIN

- (43) Zhe jiushi ta<sub>i</sub> taitai bu xu ta<sub>i</sub> he jiu de neige ren<sub>i</sub>.  
 this is he wife not allow he drink wine RM that person  
 '\*This is the person<sub>i</sub> who<sub>i</sub> his<sub>i</sub> wife didn't allow to drink wine.'

#### SOUTH MIN

- (44) Jile<sub>i</sub> tosi in<sub>i</sub> bo m jun i<sub>i</sub> lim jiu hile lang<sub>i</sub>.  
 this one is he wife not allow he drink wine that person.  
 '\*This is the person<sub>i</sub> who<sub>i</sub> his<sub>i</sub> wife didn't allow to drink wine.'

## KOREAN

- (45) I saram-i<sub>i</sub> caki<sub>i</sub> che-iy cukim-i silphike mantin saram-ita<sub>i</sub>.  
 this man self wife's death sad make man  
 '\*This is the man<sub>i</sub> who<sub>i</sub> his<sub>i</sub> wife's death made sad.'

## YORUBA

- (46) Okunrin naa<sub>i</sub> ti esun naa pe o<sub>i</sub> jẹ ẹlẹtan jẹ loju ngbe ni Urbana.  
 man the claim the that he be fraud surprise lives in Urbana.  
 '\*The man<sub>i</sub> who<sub>i</sub> the claim that he<sub>i</sub> was a fraud surprised lives  
 in Urbana.'

## HEBREW

- (47) Hais<sub>i</sub> še hašmua še hu<sub>i</sub> haya meragel hiftia oto<sub>i</sub> gar beTel Aviv.  
 the man that the rumor that he was spy surprised him lives in  
 Tel Aviv.  
 '\*The man<sub>i</sub> who<sub>i</sub> the rumor that he<sub>i</sub> was a spy surprised lives in  
 Tel Aviv.'

## GERMAN

- (48) a. Hier ist die dame<sub>i</sub>, die<sub>i</sub> der Gedanke Überraschte, dass sie<sub>i</sub>  
 here is the lady whom the thought surprised that she  
 gestern geheiratet hätte.  
 yesterday married had  
 'Here is the lady<sub>i</sub>, who<sub>i</sub> the thought surprised that she<sub>i</sub> had  
 gotten married yesterday.'
- b. Hier ist die dame<sub>i</sub>, die<sub>i</sub> der Gedanke dass sie<sub>i</sub> gestern  
 here is the lady whom the thought that she yesterday  
 geheiratet hätte Überraschte.  
 married had surprised.  
 '\*Here is the lady<sub>i</sub> whom<sub>i</sub> the thought that she<sub>i</sub> had married  
 yesterday surprised.'

The hypothesis that the applicability of BPC to relativized noun phrases in English is the effect of analogy correctly predicts the grammaticality of (43)-(48). There is no reason to expect an analogical relationship between relativized noun phrases and questioned noun phrases in the languages

cited in (43)-(48).

The second prediction from the analogical hypothesis is that there is a tendency for BPC to be extended to relativized noun phrases in languages in which relative and interrogative forms are similar. This prediction is also confirmed. In French, the same set of lexical items serve as relative and interrogative pronouns. Compare (49) and (50).

(49) Interrogative Pronouns: qui 'who'; que 'what (object)': quel, quelle, quels, quelles 'what (adjective)'.

(50) Relative Pronouns: qui 'who, which': que 'whom, which'; le quel, laquelle, lesquels, lesquelles 'which (after a preposition)'.

Both relativization and wh question formation are movement rules. Note the necessity of pied piping, as in (51)-(52).

(51) Avec qui parlez-vous?

with whom speak you

(52) Voici l'homme avec qui vous avez parlé.

here is the man with whom you have spoken

Sentences (53)-(54) show the existence of a constraint against backward pronominalization in French.

(53) Quand un garçon se lève , il se brosse les dents.  
s'est élevé

'When a boy gets up , he brushes his teeth.'  
has gotten up

(54) Quand il se lève , un garçon brosse les dents.  
s'est élevé

When he gets up , a boy brushes his teeth.'  
has gotten up

(53) is ambiguous between a reading in which garçon and il are coreferential and a reading in which they refer to different individuals. In sentence (54), however, il and garçon cannot have the same referent. The constraint also holds for wh interrogatives.

(55) Qui<sub>1</sub> est-ce-que l'idée qu'il<sub>1</sub> serait ici en été démoralisait?

'Whom did the idea that he would be here in the summer demoralize?

Sentence (55) is grammatical only on a reading in which qui and il are not coreferential.<sup>3</sup>

Sentence (56) shows that BPC extends to wh relativized noun phrases in French.

- (56) Voici l'homme<sub>i</sub> que<sub>i</sub> l'idée qu'il<sub>j</sub> serait à Paris en été démoralisait.  
'Here's the man who the idea that he would be in Paris in the summer demoralized.'

I have presented evidence which, I believe, shows convincingly that the applicability of BPC to (39b) is the result of analogy. The only treatment of these phenomena other than my own with which I am familiar is found in Postal (1972). Postal claims that BPC in English is a global constraint on wh movement. I have argued previously (Cole 1972) that although Postal's analysis has initial plausibility, it can be falsified on the basis of evidence internal to English. I should like to note in passing that Postal's constraint cannot be extended to languages in which wh questions are formed without wh movement. Nor does Postal's treatment predict in which languages BPC will be extended to relativized antecedents. Consequently, I shall assume that my explanation of the phenomena discussed above is the correct one.

In closing, I should like to mention some reasons why I think BPC is of general theoretical interest. The main importance of the facts I have presented is that they provide a clue to how apparently arbitrary syntactic phenomena come to be manifested in a language. The arbitrary phenomenon which I discussed is the constraint against backward pronominalization with wh relativized antecedents in English and French. Unlike BPC with indefinite antecedents, there is no semantic explanation for this constraint. An explanation can, however, be found if we abandon the notion that meaning and form are separate components of the language faculty. Rather, lexical similarity among items that have very different semantic functions can cause the extension of syntactic properties from one item to another. To quote from Jespersen (1924: 56):

"Syntactic categories thus, Janus-like, face both ways, toward form, and toward notion. They stand midway and



form the connecting link between the world of sounds and the world of ideas."

Another reason why this study may be of general interest is the methodology employed. It has often been assumed that analogical explanations for syntactic phenomena are inherently unscientific because it is difficult to imagine conditions under which such hypotheses may be falsified. I have shown that in cases where language internal falsification is difficult (or impossible), analogical hypotheses lead to cross linguistic predictions which are susceptible to disconfirmation.

#### FOOTNOTES

\*This paper was read at the 1972 Annual Meeting of the Linguistic Society of America.

<sup>1</sup>Not all speakers of English manifest this constraint. There are in fact principled reasons for variation among speakers, but a discussion of this matter is beyond the scope of this article. See Cole (1973), where I attempt to show the motivation for the variation.

<sup>2</sup>Overt pronouns are not normally used in this form in Korean. My informants tell me that sentences like (13) are acceptable in certain contexts. My interest here is in the possibility of coreference.

<sup>3</sup>Sentences of the form of (55) and (56) are less than fully grammatical on the non-coreferential reading. What is of interest is that a coreferential reading is considerably more deviant than a non-coreferential reading.

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GLOBAL GRAMMAR VERSUS INDEX GRAMMAR: A QUESTION OF POWER \*

Peter Cole

I. Introduction

Two formalisms have been proposed in the literature for making derivational history available to syntactic rules: global grammar and index grammar. In this paper I shall compare these two formalisms in terms of the power of each formalism. In order to do so I shall distinguish between strong global grammar (global grammar with no restriction on the number of stages in the derivation to which a rule may refer), and weak global grammar (global grammar in which the number of stages in the derivation to which a rule may refer is restricted). Only the need for weak global grammar has been claimed in the literature.

I shall demonstrate that index grammar and strong global grammar are equivalent. A proof that the set of weak global languages is properly contained in the set of index languages will be presented.

II. Formalisms for representing derivational history in syntax

Since the publication of Noam Chomsky's Aspects of the Theory of Syntax in 1965, a number of changes in linguistic theory have been proposed in order to account for phenomena of natural language not amenable to treatment within the Aspects model. One such change, argued for by George Lakoff (1970) inter alia, is that global rules (in contradistinction to local rules) are necessary. A local rule contributes to the determination of the well-formedness of a derivation by either sanctioning or prohibiting the appearance of two adjacent phrase markers in the derivation. However, a global rule has the added power of marking a derivation as well-formed or ill-formed on the basis of phrase markers which are not adjacent in the derivation. Looked at from a slightly different point of view, the environment for the application of a local rule can only be the tree which will undergo the change specified in the rule. The environment for a global rule may include trees other than the one affected by the rule.

It has generally been assumed that a theory of grammar allowing global rules is more powerful than a theory without such rules. This would seem to be true, since the chief motivation for global rules is that they provide a way to account for data which cannot be accounted for naturally without access to derivational history. Since the class of languages generable by Aspects model grammars appears to be considerably greater than the class of natural languages, it would not seem desirable to increase the number of formally generable languages still further. Thus Baker and Brame (1972:52) argue that 'a model incorporating global constraints can be justified only by finding sets of data which resist a general treatment in transformational terms, but which allow a general treatment in global terms.'

In the same article, Baker and Brame propose a formalism for allowing access to derivational history without allowing a rule to refer to phrase markers other than the phrase marker to be operated on by that rule. That is, global information is made available to local rules. This is accomplished by 1) rules inserting indices which encode facts about the phrase marker at the point in the derivation at which indices are inserted, and 2) rules sensitive to the presence or absence of these indices. The latter rules may not refer directly to derivational history; however, they have access to derivational information by means of the indices inserted by earlier rules.

### III. The power of global and index grammars

Persuasive arguments against the Baker-Brame approach have appeared in Postal (1972) and Lakoff (1972). I should like to add to those arguments a further argument having to do with the power of grammars using indices to encode derivational history (hereafter index grammars), in contrast to the power of grammars with rules that make use of derivational history directly (hereafter global grammars). I shall show that the set of languages which may be generated by global grammars of the sort proposed in the literature is a proper subset of the set of languages generable by index grammars. Thus the burden of proof falls on the proponents of index grammar to show that the power to generate languages not generable by global grammar is in fact necessary.<sup>1</sup>



My proof involves a number of assumptions about global and index grammars. Firstly, the hypothesis that global rules are necessary can be held in a strong or a weak form. The strong form claims that there are rules of the grammar whose environments require reference to all previous phrase markers in the derivation (or to at least one phrase marker in each cycle). Since the principle of the cycle (which I take to be established) entails that no upper limit be placed on the number of phrase markers in a derivation, a strong global grammar could not be limited with regard to the number of phrase markers to which a rule might be sensitive.

The weak form of global grammar contends that although there are rules which must be sensitive to nonadjacent trees in a derivation, there exist a maximal number of phrase markers to which a rule may refer. The theory of global grammar proposed in the literature is in fact a highly restricted version of weak global grammar, since no arguments have been published claiming that a rule must refer to more than three stages of the derivation. For example, Postal (1972) argues that there exists a rule which must refer to three (rather than two) phrase markers in the derivation. Throughout the remainder of this paper I shall assume that the theory of global grammar proposed is some variant of weak global grammar.

Secondly, there does not seem to be any nonad hoc way to divide index grammar into strong and weak index grammar. If rules are allowed to insert arbitrary indices into trees so as to preserve information about derivational history, this information is available to all rules applying after the information is inserted. Thus if there are m cyclic rules which insert markers and there are n cycles, m times n markers (each marker encoding information about a distinct stage in the derivation) are available to a post-cyclic rule, r. Since there can be no upper limit to n (the number of cycles applied), there can be no upper limit to m times n (the number of stages in the derivation to which a rule r may refer). Thus an index grammar has the same potential power as a strong global grammar in that there is no formal reason why a rule of an index grammar should not refer to an unlimited number of stages in the derivation.<sup>2</sup>

IV. The set of weak global languages as a proper subset of the set of index languages.

I shall now show that the set of weak global languages is properly contained in the set of index languages. The form of the proof is as follows. There is an effective procedure for converting weak global grammars into index grammars. Thus the set of weak global languages is a subset of the set of index languages. There exists an index language (in fact, a class of languages--although the latter will not be demonstrated here) which cannot be generated by a weak global grammar. Therefore the set of index languages properly contains the set of weak global languages.

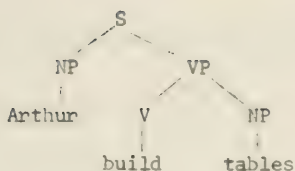
The effective procedure for converting weak global grammars to index grammars is trivial. Whenever a weak global rule  $r_1$  makes reference to a node  $\underline{\alpha}$  in some nonadjacent phrase marker, in the equivalent index grammar there will be two rules. The first rule  $r_0$  inserts an index marking  $\underline{\alpha}$  as  $\underline{\alpha_x}$  (where  $x$  is an arbitrary marker encoding some information about the phrase marker). The second rule  $r_{\underline{1}}$ , is identical to the weak global rule  $r_1$  except that it refers to the node corresponding to  $\underline{\alpha}$  (including any indices) in the input to  $r_{\underline{1}}$ , rather than to two stages in the derivation. Thus the set of weak global languages is a subset of the set of index languages.

I shall now demonstrate that the set of weak global languages is a proper subset of the set of marker languages. Consider a hypothetical language, Linglish, containing, in addition to the usual rules of English, the following case marking processes. A noun receives one of three case markers: the suffix -ab if it was the subject of some clause at the end of every cycle; the prefix surd- if it was the object of some verb at the end of every cycle; no affix otherwise (e.g. if it were in subject position at the end of one cycle and in object position at the end of another cycle).

#### V. Some derivations in Linglish

The following sentences and trees illustrate Linglish Case Marking. Sentence (2) derives from (1). Hence the subject noun of (2) has the suffix -ab and the object noun has the prefix surd-. (Morphophonemic rules applying to the affixes -ab and surd- are ignored.)

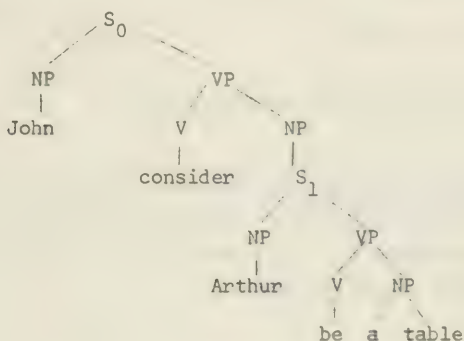
(1)



(2) Arthurab builds surdtables.

Contrast the above sentence with (3) and (4).

(3)

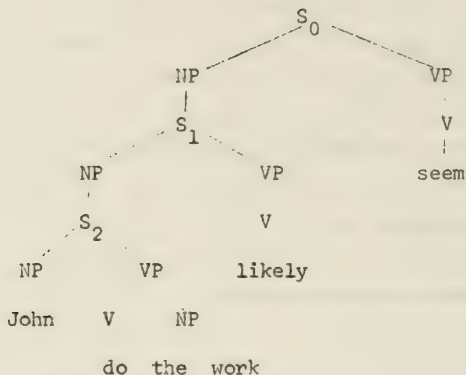


(4) Johnab considers Arthur to be a surdtable.

Note that the noun Arthur receives the null case marking because it is in subject position at the end of the  $S_1$  cycle and in object position at the end of the  $S_0$  cycle.<sup>3</sup> Since the grammatical functions of the subject of  $S_0$  and the object of  $S_1$  do not change in the course of the derivation, they receive nonnull case marking.

Consider the derivation of (6) from (5).

(5)

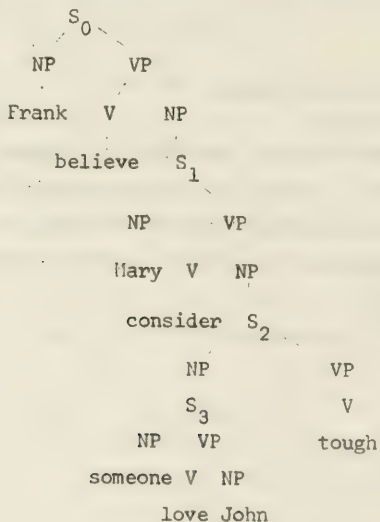


(6) Johnab seemed to be likely to do the surdwork.

Although underlying John has been raised from  $S_2$  to  $S_0$ , it was in subject position at each stage in the derivation. Hence the suffix -ab is appropriate.

One further example should make the operation of the case marking process fully clear. Sentence (8) is derived from (7).

(7)



(8) Frankab believes John to be considered by Mary to be tough to love.

Note that only underlying Frank serves the same grammatical function at the end of each cycle and thus receives the suffix -ab on the surface. John is raised to subject position on the  $S_2$  cycle by Tough Movement; on  $S_1$  John undergoes Subject Raising into object position. John is then made the subject of  $S_1$  by Passive. Finally, on  $S_0$  John is raised into object position by Subject Raising. Although John is in object position in both underlying and superficial structure, the sentence is not realized as (9), but rather as (8).

(9) \*Frankab believes Surdjohn to be considered by Mary to be tough to love.

Therefore, it is clear that the case marking rules of Lingshish must be formulated in such a way that only those nouns which do not change their function throughout the derivation receive an overt case marker.

#### VI. Accounting for the facts of Lingshish

Clearly, the facts of Lingshish require access to derivational history. However, these facts cannot be accounted for by a weak global grammar. Since there is no limit to the number of cycles, there can be no maximal number of stages to which Case Marking must refer in assigning case. Case Marking cannot determine which case marker to apply until each noun has been traced through the derivation to underlying structure. Note, for example, that although underlying John receives the suffix -ab in (6), the null marker is assigned in (10a).

- (10) a. John seemed to be likely to be tough to love.  
 b. \*Johnab seemed to be likely to be tough to love.

Since no limit can be placed on the number of cycles between superficial structure and underlying structure, there can be no maximum to the number of levels to which Case Marking can refer. Hence by definition Case Marking is not a weak global rule. Thus Lingshish is not a weak global language.



The facts of Linglish can, however, be explained easily by an index grammar. The following rules are necessary.

(11) Redundancy Rule

[+NP] -----> [-s,-o-io]

(12) Transformations

a. [+NP, -s] -----> [+s] / <sub>S</sub> \_\_\_ VP

b. [+NP, -o] -----> [+o] / <sub>VP</sub><sup>V</sup> (NP) \_\_\_

c. [+NP, -io] -----> [+io] / <sub>VP</sub><sup>V</sup> \_\_\_ NP

(13) Spelling Rules

a. [+NP,+s,-o,-io] ----- -ab

b. [+NP,+o,-s,-io] ----- surd-

Rules (12a-c) are obligatory, and are ordered in the cycle after all other cyclic rules. Rules (13a-b) are obligatory and postcyclic. Lines (11)-(13) will mark nouns which are subjects at the end of every cycle with the suffix -ab and nouns which are objects at the end of every cycle with the prefix surd-, while nouns having different functions at the end of two or more cycles would receive the null case marker.<sup>4</sup>

## VII. Conclusions

I have shown that the set of index languages properly includes the set of weak global languages. This has been done by presenting an effective procedure for converting a weak global grammar into an index grammar. There is, however, no effective procedure for converting index grammars into weak global grammars. I presented an example of a language, Linglish, which can be generated by an index grammar and not by a weak global grammar. Thus I am justified in claiming that index grammars are more powerful than weak global grammars.

No evidence has been presented by the proponents of index grammar that such power is necessary. Hence I conclude that if derivational history must be made available to syntactic rules, weak global grammar is to be preferred over index grammar.

## Footnotes

\*I should like to thank Jerry Morgan and Royal Skousen for helping me clarify my thoughts on the topic of this paper. George Lakoff pointed out a number of inconsistencies in an earlier version of this paper, for which I am grateful. The form of the rules for Lingshish was suggested by him. Jerryab Morganab provided surddata from Lingshish.

<sup>1</sup>I make the assumption here that the use of indices in global grammar for such purposes as stipulating coreference will be limited or eliminated. This assumption is necessary in order to prevent the formulation of global grammars in which indices are used to encode derivational history.

<sup>2</sup>For the purposes of this paper I shall assume that all derivational history (including information about the semantic representation of a sentence) either is preserved by arbitrary indices or can be referred to by global rules. Of course, the proponents of index grammar might well wish to refer to semantic information by rules of semantic interpretation. This would not affect the relative power of global and index grammars.

<sup>3</sup>The derivation of (4) from (3) constitutes the prototype of an argument for Subject Raising into object position.

<sup>4</sup>Of course, the same results could be achieved by a strong global grammar; to the best of my knowledge no one has claimed the need for strong global grammar.

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WHY DELETE TENSE?\*

David E. Johnson

0.0. Transderivational rules and conversational implicature.

Gordon and Lakoff (1971) (henceforth G&L) discuss two examples where context and conversational postulates determine the applicability of a transformation. The first transformation, which will be termed TENSE-deletion, relates the following sentences.

(1) Why do you paint your house purple?

(2) Why paint your house purple?

G&L observe that (1) is ambiguous: it can be a literal request for an answer or a suggestion that perhaps the "action" is misguided. Sentence (2), however, can only be a suggestion that the "action" is ill-conceived and should not be carried out. G&L assume that (1) and (2) have the same logical structure and differ only in terms of "conversational import". This difference in conversational import is predictable from the following formulation of TENSE-deletion:

(3 = G&L's 13) With respect to a class of contexts  $CON_i$  and a set of conversational postulates CP, WHY YOU TENSE  $x \rightarrow$  WHY  $x$ , if and only if, letting L be the logical structure of the sentence,  $CON_i \cup CP \cup \{L\} \vdash$  Unless you have some good reason for doing  $x$ , you should not do  $x$ .

This is abbreviated to:

(4 = G&L's 14) WHY YOU TENSE  $x \rightarrow$  WHY  $x$  ONLY IF  $C \vdash$  Unless you have some good reason for doing  $x$ , you should not do  $x$ .

Note that  $\vdash$  means "entails" and C represents the fact that the entailment is dependent upon  $CON_i \cup CP \cup \{L\}$ . G&L further observe that "such a rule would, of course, be transderivational."

The second transformation, Verb-Subject Inversion (VSI) relates such sentences as (5) and (6).

(5) I want to know where Harry went.

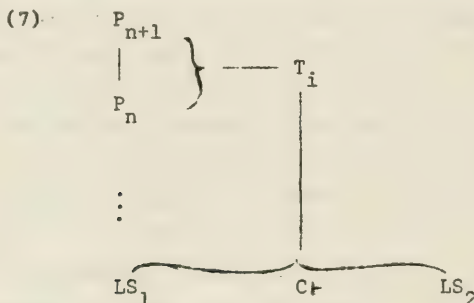
(6) I want to know where did Harry go?

(note: G&L do not discuss the intonation pattern of (6).)

According to G&L there are dialects where both (5) and (6) are possible. Furthermore, while (5) is ambiguous in that it can be a statement of desire or a request, (6) is unambiguous; it can only be a request for information. G&L assume that (5) and (6) are related by VSI, i.e., they have the same logical structure, and they conclude that the rule is sensitive to whether or not the speaker is requesting information.

#### 0.1. The General Nature of the Claim.

As G&L point out, the type of rule discussed in the above section is a transderivational rule, i.e., in rough terms, it is a transformational rule whose operation is sensitive to information in a separate derivation. More specifically, a transformation  $T_i$  maps a phrase marker  $P_n$  onto  $P_{n+1}$  just in case the logical structure  $LS_1$  of the derivation conversationally entails the logical structure  $LS_2$  of a separate derivation. The general form of this rule is represented schematically below.



In other words,  $T_i$  is sensitive to the output of the conversational entailment of  $LS_1$ . Since the entailment  $LS_2$  is in another derivation,  $T_i$  is transderivational. Thus, G&L add the relation

(8)  $L^a$  conversationally entails  $L^b$ .

to the stockpile of transderivational relations.

The claim that  $T_i$  is transderivational in the above sense is a distinct issue from the existence of conversational postulates per se. G&L offer the two cases discussed in 0.0 in support of their claim that conversational postulates are grammatically relevant in the sense that the application of certain transformations are dependent upon such information. This is a strong claim which significantly expands the type of information that transformations are sensitive to and as such it should be scrutinized carefully.<sup>1</sup>



### 1.0. Specific Claims.

This paper will be concerned with G&L's proposed rule of TENSE-deletion.

#### 1.1. Preliminary observations: neutral territory

The following examples show that the application of TENSE-deletion must be restricted in certain cases. For example:

(9) a. Why do you have big feet?

(9) b. \*Why have big feet?

(10) a. Why do you sweat so much?

(10) b. \*Why sweat so much?

(Compare the idiomatic Why sweat it so much?)

Notice that there are grammatical sentences of the type under discussion with have:

(11) Why have them leave so early?

More examples are given below:

(12) a. Why do you intend to do that?

(12) b. \*Why intend to do that?

(13) a. Why do you seem so tall?

(13) b. \*Why seem so tall?

(14) a. Why do you appear so tall?

(14) b. \*Why appear so tall?

(15) a. Why do you resemble your father?

(15) b. \*Why resemble your father?

(16) a. Why do you want to go?

(16) b. \*Why want to go?

(17) a. Why do you mind the music?

(17) b. \*Why mind the music?

(18) a. Why do you think you're going?

(18) b. \*Why think you're going?

The ungrammatical sentences all describe a state of affairs that is not under the addressee's control. From this it would follow that it makes no sense to suggest that "unless you have some good reason for doing x, you should not do S". Thus, the above examples are consonant with G&L's analysis. For sentences of the form Why VP to be grammatical, the verb phrase must describe something that is under the person's control.

It should be noted that the generalization given here is an oversimplification. This becomes apparent when (18)a and (18)b are compared to (19)a and (19)b.

(19) a. Why do you think that?

(19) b. Why think that?

Surely, think in both (18)b and (19)b are the same word and yet (18)b and (19)b differ in grammaticality. Although the observation that the VP must refer to something that is under the hearer's control seems to be basically correct, it is insufficient to account for the contrast between (18)b and (19)b.

Sentences such as

(20) a. Why do you believe in magic?

(20) b. Why believe in magic?

indicate that the do in (20)a, which is absent from (20)b because TENSE-deletion has applied, can not be identified with Ross' active do since believe is not an active verb. This is in accord with G&L's implicit assumption since they formulate their rule in terms of TENSE.<sup>2</sup>

### 1.2. Minor problems with G&L's proposal.

There are several minor problems with the formulation of the TENSE-deletion rule as G&L present it. First, the underlying subject of Why VP sentences is not always YOU. Evidence for this comes from the following dialogue.

(21) I read in the paper this morning that the mayor was busted  
at the skin flicks last night.

I can understand a lot of things but

a. Why go to the skin flicks?

b. \*Why { do / would } you go to the skin flicks? (#a)

It is obvious that (21)b is entirely inappropriate as a source for (21)a. (21)a can be more adequately paraphrased by (21)c:

c. Why would { anyone / one } go to the skin flicks?

G&L do not explicitly claim that all Why VP sentences are derived in the same way, but for their proposal to have any explanatory value it must handle all cases where Why VP sentences entail the same basic conversational postulate in an identical fashion. For example, (21)a above

conversationally entails that "unless one has a good reason for going to the skin flicks, one should not do so" and, hence, should be derived by the same rule that applies in (2). Thus, an indefinite NP such as ONE or ANYONE must be deletable.

Another problem is that TENSE-deletion must be blocked if the sentence is in the past or future tense.

- (22) a. Why did you run?
- (22) b. \*Why run? (# to (22)a)
- (22) c. \*Why ran?
- (23) a. Why will you run?
- (23) b. \*Why run? (# to (23)a)
- (23) c. \*Why will run?

Of course, both of the above observations can be easily handled within G&L's analysis by specifying that TENSE be PRESENT TENSE.

### 1.3. A major problem with G&L's proposal.

There are a number of sentences which have no corresponding, grammatical sentences with do in them. For example:

- (24) a. \*Why do you start a career in show biz?
- (24) b. Why start a career in show biz?
- (25) a. \*Why do you kill yourself (literally)
- (25) b. Why kill yourself?
- (26) a. \*Why do you decide tomorrow?
- (26) b. Why decide tomorrow?
- (27) a. \*Why do you be kind to your husband?
- (27) b. Why be kind to your husband?

It will be assumed that do-insertion is blocked in these cases. The question still remains: what is the underlying structure for sentences like (24)b, (25)b, (26)b, and (27)b? Looking at (27)b for example, one might postulate an intermediate structure such as

- (27) c. YOU TENSE BE KIND TO YOUR HUSBAND WHY?

However, (27)c can also result in

- (27) d. Why are you kind to your husband?

Notice that in (27)d it is assumed that the addressee is, in fact, kind to her husband. There is no such assumption in (27)b, however. This is not an isolated case. Many sentences that are supposedly related by TENSE-deletion are not mutually interchangeable and this contrast in behavior

is not always traceable to a difference in conversational import.

For instance, if someone says:

(28) I've never smoked in my life.

one can answer:

(29) a. Why smoke?

but not:

(29) b. \*Why do you smoke?

Also compare the difference between (30)a and (30)b:

(30) a. Why hit your kid?

(30) b. Why do you hit your kid?

It seems doubtful that (29)a should be derived from the structure underlying (29)b or that (30)a from that under (30)b. The underlying source for (29)a would not even be grammatical given the context of (28). In contrast to (30)a, sentence (30)b conveys the information that you either have hit your kid in the past or are presently hitting your kid. Another example of two sentences related by TENSE-deletion which have different logical entailments is the following:

(31) Why do you vote for Republicans?

which implies

(32) You vote for Republicans.

(33) Why vote for Republicans?

which does not logically imply

(34) You vote for Republicans.

These meaning differences are certainly not accounted for by G&L's CP (4=14). In fact, it does not seem to be a matter of conversational import at all. Although G&L never explicitly define what should be considered a matter of conversational import rather than of the logical meaning, the differences in meaning discussed in this section must be considered differences in the latter or else (it would seem) there would be no limit to what can be redefined as a conversational implication, which would make the distinction between it and the logical structure meaningless. By G&L's hypothesis, these sentences have identical underlying structures and differ only in the application of an optional transformation. In cases where there is a difference in meaning between the

sentences related by TENSE-deletion (for example, (31) and (33) above), the identical underlying structure must not really be the logical structure. But given this, it would appear that the only way to account for the differences in meaning would be by some sort of surface structure, semantic interpretation rule which relates the surface forms to their respective logical representations (which are distinct). From the viewpoint of generative semantics, this is undesirable.

## 2.0. An Alternative Analysis: Abstract Modal.

If the answer to "why delete TENSE is 'don't'", then what is the source for the Why VP sentences? One logically possible analysis would be to claim that they are "directly" generated. The immediate problem with this proposal is that it does not account for the semantics of the sentences, that is, it does not account for negative should force of Why VP (see Green 1972, 15; Morgan, 1972) nor for the positive should force of Why not VP (for example, Why not be a good little boy, Hermie?). Abandoning this line of attack seems safe enough.

Another possibility (and the one proposed in this paper) is that the source for the Why VP sentences contains an abstract modal whose meaning is in certain cases, very close to should (if not identical). Many Why VP sentences are paraphrased fairly well by sentences with should in them. Some examples:

(35) a. Why should you be kind to your husband?

(35) b. Why be kind to your husband?

(36) a. Why should you kill yourself?

(36) b. Why kill yourself?

(37) a. Why not vote for Harry?

(37) b. Why shouldn't  $\begin{Bmatrix} \text{one} \\ \text{you} \end{Bmatrix}$  vote for Harry?

(38) a. Why get a Ph.D.?

(38) b. Why should one get a Ph.D.?

It is likely that there is more than one underlying modal. A good candidate for a sentence like (39)a is an abstract modal having roughly the meaning of would.

(39) a. Why would one to to the skin flicks?

(39) b. Why go to the skin flicks?



Although the only argument for this proposal at present is semantic, at least it does not conflict with the facts in the way that TENSE-deletion does.<sup>3</sup> There are several advantages to the proposal suggested here. The major advantage is that a transderivational constraint is no longer needed.<sup>4</sup> The sentences with should in the surface are unambiguously suggestions just like the corresponding Why VP sentences. All that would be needed for the correct interpretation of the "negative should force" would be a meaning postulate to the effect:

(45) WHY SHOULD  $\longrightarrow$  SHOULD NOT

Thus, the sentences

(36) a. Why should you kill yourself?

(36) b. Why kill yourself

would imply

(46) You should not kill yourself.

In a similar fashion,

(37) a. Why not vote for Harry?

implies

(47) You should vote for Harry.

(The last implication is derived via the rule of double negation: WHY NOT VP  $\longrightarrow$  YOU SHOULD NOT VP  $\longrightarrow$  YOU SHOULD VP). Unlike G&L's proposal, this one allows the correct interpretation of the Why VP sentences to be derived from the information present in only one underlying representation.<sup>5</sup>

### 3.0. Conclusion.

G&L's proposal that there is a transformational rule of TENSE-deletion is in conflict with the syntactic and semantic facts of Why VP sentences. Consequently, their claim that TENSE-deletion must be a transderivational rule which is sensitive to conversational entailment is unsupported. An alternative source for these sentences was suggested, namely, it was proposed that these sentences are derived from underlying structures that have an abstract modal in them. It was argued that G&L's observations concerning the "suggestive" force of these sentences can be accounted for without transderivational rules by means of a simple meaning postulate and the logical rule of double negation.

## FOOTNOTES

\* I would like to thank Georgia Green and Jerry Morgan for their comments on this paper. Any errors are my own.

<sup>1</sup> Notice that G&L's discussion, for instance, of the distribution of please and here is a different issue which does not involve the application of a transformation that is sensitive to conversational entailment.

<sup>2</sup> There are numerous complications with the Why VP construction. For example, although (19) is fine, compare

- (i) Why do you believe you're going home?
- (ii) \*Why believe you're going home?
- (iii) Why hope for so much?
- (iv) \*Why hope that you're leaving.

<sup>3</sup> Certain problems arise, such as: Why should you want to know, but not \*Why want to know?

<sup>4</sup> The assumption here is that since transderivational rules increase the power of a grammar, they should be avoided if possible.

<sup>5</sup> Of course, a rule which deletes the abstract modal and the subject would be needed: roughly,

WHY	{	SHOULD	YOU	}	VP	→	WHY VP
		WOULD	ONE	}			opt.

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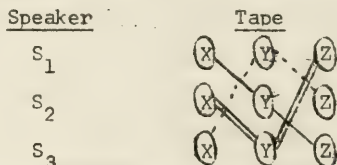
of "perceptual interference" and also establishes "the hierarchy of difficulties" (or probable error) on the part of English speakers. Thus this investigation has pedagogical merit, too.

### 1.0. Methodology

A context-free data of minimal pairs of a set of 22 consonants in initial, medial and final position was collected. The minimal pairs are of two types: 1) unvoiced unaspirated vs. unvoiced aspirated; 2) voiced unaspirated vs. voiced aspirated. Minimal pairs across the two types were also collected. The total number of items in the data is 62, with the following syllabic structures: CVCVC (18), CVCV (3), CVC (37), VC (2), VCC (1), VCV (1). Both meaningful and non-sensical, but phonologically possible, pairs of words were included in the data.

The randomized data was presented to three native speakers<sup>2</sup> of Hindi for recording. The recording of this data was made in the University of Illinois Phonetic Laboratory at the speed of 33/4 IPS on AMPEX Model AG 440 tape recorder.

In order to include all 62 items but to maintain the random nature of the data, the recording of each speaker ( $S_1$ ,  $S_2$  and  $S_3$ ) was cut at two uniform points. Thus, the recording of each speaker was divided into three parts (X, Y and Z) and was joined together as shown in the diagram.



This tape (which I shall call  $T_1$ ) included three readings and each reading contained the voice of three informants.

The final version of the perception test tape ( $T_2$ ) was prepared by copying  $T_1$  and by inserting the necessary instructions. In  $T_2$  sufficient space was inserted between each item so as to allow subjects enough time to mark their responses.

The test matrix<sup>3</sup> of 62x 4 was constructed by presenting the

minimal pairs of every correct item. For example, if the correct recorded item is /kər/, the test matrix was prepared in the following way: /kər/ /kər/ /gər/ /ghər/

The perception test was relayed in the sound-isolated phonetic laboratory of the University of Wisconsin, Madison. The test-tape was played from the teacher's booth and 25 English-speaking subjects<sup>4</sup> heard it in their respective booths.

The IBM 360-25 was used to perform a quantitative analysis of more than 18,000 items. The test matrix was assigned codes. The integers represented the vertical position of the item. On the horizontal scale A, B, C, D represented 1st, 2nd, 3rd and 4th position, respectively.

On the data cards, all the responses were punched according to the following input format: 1) one or two integers represented the vertical position of the item; 2) A/B/C/D/ represented the horizontal position and 3) was followed by ', '4) representing the end of the reading.

## 2.0. Results

Tables I, II and III represent the distribution of the records made by the subjects in the initial, middle and final position respectively. The consonants given along the horizontal axis represent the sound which was perceived by the subjects and the consonants along the vertical axis indicate the consonants which were spoken by informants. For example, in Table I, the second line indicates that kh was spoken in the initial position. Out of 75 occurrences of kh, 19 times it was perceived as k; 55 times correctly as kh; and zero times as g and gh. Once there was no response. Thus, out of 75 occurrences of kh, 55 times it was correctly responded and 20 times it was confused.

The diagonal represents the correct responses given by the subjects while readings on the left or right of it denote errors. In the tables, NR stands for "No response", and TC stands for "Total Confusion" which is the sum of all the readings which appears on the left or right of the diagonal plus NR.

The results presented in these Tables (I, II and III) are summarized below:

- (1) In all the positions, unvoiced unaspirated consonants, such as k, c, t, T and p are mistaken more than unvoiced aspirated consonants. In medial position the only exception is TH. TH is more confused than T.
- (2) In initial and medial positions, voiced aspirated consonants are more confused than voiced unaspirated consonants. The exceptions are DH and gh in initial position.
- (3) In contrast to initial and medial position, the confusion in voiced unaspirated consonants is more than in voiced aspirated consonants in final position. The only exception is g.
- (4) The rate of confusion in the palatal series is much higher than the rate of confusion which took place in other series.

Thus, the above results indicate that subjects reacted differently in final position and in initial and medial position in the case of voiced aspirated consonants.

Table IV points out the first and second probable errors and presents a clear picture of mistakes made by the subjects. The probable error is drawn from the reading of Table I, II, and III. First probable error refers to the most frequent mistake while the second probable error to the next most frequent mistake. For example if g is 5 times mistaken for k and 3 times mistaken for kh, then the first probable error for g will be k and the second probable error will be kh.

In some cases there is a probability of three errors but the third one is the least confused; that is why it is omitted in Table IV. The most important error is the first probable error. The error which is responsible for 33% or more of the confusion is marked as significant error and is indicated by a line under it and if 5% or less confusion is caused by an error, that error is considered to be insignificant and is indicated by a star.

The probable error in initial, medial and final position is determined from Tables I, II and III respectively. And then on the



basis of significance and frequency of the error in all three positions, a combined error is determined. The two other results which can be drawn from Table IV are given below:

- (5) First probable error indicates that the confusion occurred most frequently between the consonant classes which can be distinguished by a single feature, i.e., either by aspiration or by voicing.

The other indirect result which can be arrived at is that there is not a single example in the first probable error which indicates that the confusion took place between consonant classes which can be distinguished by two features, i.e. voicing and aspiration. Second probable error record shows that such type of confusion did take place but it was insignificant.

Table V presents the rank ordering of features. The rank ordering has been expressed in terms of one feature as well as in two features. The rank ordering of the consonants is determined by adding the total number of confusions which took place in the perception of those consonants. First, the ranks have been established according to initial, medial and final position, i.e. information transmitted by Tables I, II, and III, respectively. For example, if any consonant is confused the least then rank 4 is assigned. On the other hand, if any consonant is confused the most in any position, it is assigned rank 1. Second, by summing up the ranks in all the positions the combined rank is determined. If the sum of all the three positions is least, rank 1 is assigned and if it is highest, rank 4 is allotted. The rank of 1 indicates the highest number of confusions and the rank of 4, the least number of confusions.

The labels in Table V are explained below:

- a. [- Aspirate] indicates that the consonants such as k and g are mistaken for kh and gh respectively.
- b. [+Aspirate] presents the opposite case of (a).
- c. [+Voiced] indicates that voiced consonants such as g and gh were confused for unvoiced consonants k and kh respectively.
- d. [- Voiced] shows that confusion was caused as a result of the addition of voicing, i.e. unvoiced consonants such as k and

kh were mistaken for voiced consonants g and gh respectively.

Rank-ordering in terms of two features is presented below:

- a. [+ voiced  
+ aspirated] refers to the reverse case of b.
- b. [- voiced  
- aspirated] means unvoiced unaspirated consonants are mistaken for voiced aspirated, i.e. consonants like k are mistaken for gh.
- c. [+ voiced  
- aspirated] expresses that the consonants such as g and c are mistaken for kh and ch respectively.
- d. [- voiced  
+ aspirated] shows that unvoiced aspirated consonants were mistaken for voiced unaspirated consonants such as the confusion of ch for j.

The results which can be drawn from Table V are given below.

(6) The confusion of unaspirates in all the positions is the highest of all.

Consequently, [- aspirated] has the highest number one while [+ aspirated] has a lower rank. The confusion which took place in terms of the two features is insignificant except for the one which has rank one.

### 3.0. Discussion

A contrastive analysis of a fragment of Hindi and English sounds will predict the following bilingual interference:

(1) In English, only unvoiced aspirated consonants occur in initial position so it is likely that an English speaker will replace unvoiced unaspirated consonants by unvoiced aspirated ones. As a result of this, the perceptual confusion of unvoiced unaspirated consonants will be more.

My results mostly agree with the above statement.

(2) In medial and final position unvoiced aspirated consonants do not occur in English. Therefore, such consonants are likely to be replaced by unvoiced unaspirated consonants unless these syllables are stressed.

My results partially agree with this prediction. In medial position unvoiced unaspirated consonants are preceded by su or ku CV-type prefix. The stress is carried by the second syllable; that is why unvoiced unaspirated consonants are mistaken more in medial

position.

(3) The voiced aspirated consonants will be mistaken more than voiced unaspirated in all the positions because they are not present in English.

My results indicate that the conclusion of contrastive analysis is relevant. The subjects confused voiced aspirated consonants more than voiced unaspirated in initial and in medial position. But in the final position the situation changes completely.

In a recent study, an attempt has been made to explain aspiration in terms of "voicing lag" (see Lisker and Abramson, 1964; Kim, 1970\*). Aspiration is explained in terms of two reference points, i.e. (a) release of closure of a stop; and (b) the onset of voicing.

Since in final position one reference point, i.e. onset of voicing is lost, thus, the theory implies that aspiration will be neutralized in word final position. In other words, aspirated sounds will be pronounced as unaspirated sounds in final position, and as a result, aspirated sounds will be perceived as unaspirated sounds in the word final position.

In final position my results indicate that aspirated consonants are recognized more than unaspirated ones. On the contrary, unaspirated consonants are mistaken more frequently.

My results get further support from another experiment which I performed with native speakers of Hindi. The results of that experiment showed the same directions.

The analysis of my results in final position raises two questions: 1) Why are aspirated (voiced and unvoiced) stops recognized more than unaspirated stops by the English speakers, while these sounds don't exist in English in final position? 2) Why are unaspirated consonants confused more although such sounds are present in English?

The answer to the first question is that in the pronunciation of aspirated consonants of Hindi a sort of strong final release is present which helps English speakers to perceive aspirated consonants more accurately in final position.

As for question 2, two possibilities can be presented as an

answer. 1) The unaspirated consonants in word-final position are released, and the release causes the English speakers to interpret them as aspirated. 2) The nature of pronunciation (of native speakers) can be responsible for the perceptual confusion of those consonants which are common to both Hindi and English. Black and Singh's (1966) experiment shows that when a set of data which included the identical sounds of languages was presented by native speakers to other native speakers and to non-native speakers, the confusion in the latter case was relatively high. It seems that the nature of pronunciation is responsible for the perceptual confusion of identical sounds.

In my results, I noticed certain exceptions. Interestingly enough, I found similar exceptions in experiments with native speakers. This shows that these exceptions seem to be related with some underlying phenomenon which is operating not only in the case of native speakers of English but also in the case of native speakers of Hindi.

Below, I will discuss the exceptions and will propose some explanations.

(1) In the case of unvoiced unaspirated consonants the only exception was present in the retroflex consonant in medial position, i.e. T is less confused in medial position. However, it is negligible.

(2) The exceptions, in the case of voiced aspirated consonants, occur in the retroflex and velar consonants. In initial and medial positions, DH is less confused and gh in the initial position is less mistaken too, while other voiced aspirated consonants are more confused in these two positions.

Now two questions arise: 1) Is this distinction parallel to the distinction which the native speakers of Hindi maintain? 2) Can they maintain this distinction because of a relative strength of aspiration present in such unaspirated and aspirated consonants?

It seems that English speakers maintain the latter type of distinction. The retroflex are considered to be [+ tense] and velars, because of their [+ back]ness inherit some aspiration.

There is another exception in final position. In final position all voiced aspirates are recognized more than voiced unaspirates. But gh is an exception.



Velar voiced aspirated consonant gh should not be mistaken more than its unaspirated counter-part, because of the following reasons: First, it carries a final release since it is an aspirated consonant. Second, it has a relatively higher degree of aspiration than dental, bilabial and palatal consonants. At this point it appears to me that either voiced aspirated consonant gh behaves like unaspirated in final position and loses its final release as well as higher degree of aspiration simultaneously. (Further research with acoustic instruments is needed to support this); or this exception points toward a psychological process of "overcompensation" which is going on in the subject's mind, i.e. English speakers, like the native speakers of Hindi, realize that aspiration is the most characteristic phonological feature of Hindi. That is why they sometimes substitute aspirated sounds for unaspirated and, as a result, we may get exceptions in cases such as gh. The shortcomings of this proposal can be easily noticed since the question arises why the phenomenon of "overcompensation" fails to operate upon other segments. Similarly, the first hypothesis can be questioned on the ground that if all other unvoiced aspirated consonants as well as voiced aspirated consonants maintain their own identity (i.e. 1) final release; 2) final-release and relatively high degree of aspiration, respectively) then why does only gh lose it in the final position? Instrument measurements are needed to answer this question.

#### 4.0. Comparison of this Investigation with Gandhi's and Jaggi's Research

Gandhi's and Jaggi's investigation of Hindi consonants also shows two results with regard to aspiration. First, in all the positions aspirates are mistaken more than unaspirates by English speakers. Second, unaspirates are substituted for aspirated sounds.

My results show disagreement with their results in the final position only, since my results show that the intelligibility of aspirated consonants is more than unaspirated, with the exception of gh in final position.

My results completely agree with their second finding. The disagreement in the final position can be caused because of several



reasons: First, in their study aspiration is not the focus; thus, their results have been determined on the basis of a very restricted amount of data. Second, from their experiment it is not clear which kind of data was used to perform such an experiment. Third, such disagreement can happen because of their inaccurate recording and listening conditions. Lastly, it may depend on the language training of the subject.

It was not mentioned in their study whether the second syllable was stressed in the middle position or not. In such a situation, it is hard to conclude whether my results agree or disagree with their findings.

#### 5.0. Summary

The following conclusions can be drawn from the above discussion. First, unvoiced unaspirated consonants are more confused than unvoiced aspirated consonants in all positions. Second, voiced aspirated consonants behave differently: 1) in initial and medial position; and 2) in final position. In initial and medial position they are mistaken more while they are better recognized in final position. Third, the confusion occurred primarily between the consonant classes which can be distinguished by a single feature, i.e., either by aspiration or by voicing. Fourth, unaspirated segments were more frequently confused than aspirated ones.  $\begin{bmatrix} - \text{ voicing} \\ + \text{ aspiration} \end{bmatrix}$  has the lowest rank, i.e. the least confusion took place in the perception of these segments. Fifth, exceptions are present only in the retroflex or velar series. In such consonants (voiced) the degree of aspiration present is relatively high. It seems that voiced unaspirated consonants of velar and retroflex series possess almost equal amounts of aspiration which is present in palatal, dental, and bilabial aspirated (voiced) consonants, and that aspirated consonants of velar and retroflex series preserve higher degree of aspiration than the aspirates of the palatal, dental or bilabial series. This is a highly tentative conclusion since it lacks empirical support. Sixth, after undergoing an intensive Hindi instruction of a semester, motivated students can develop perceptual cues for aspiration. They can hear

aspiration in more than 50% of the cases. Lastly, the rate of confusion in the palatal series is much higher than the rate of confusion which takes place in other series.<sup>6</sup>

#### NOTES

<sup>1</sup>My thanks are due to the following for their comments on this paper: Chin-chuan Cheng and Chin W. Kim. They are, however, not responsible for any mistakes in this project.

<sup>2</sup>I had three informants: two males (myself and Mr. Anil Arora) and one female, Mrs. Vimala Mohan. They are from Dehli, Pant Nagar (U.P.), and Lucknow (U.P.) respectively. My thanks are due to them.

<sup>3</sup>I am thankful to Mrs. Y. Kachru for the various suggestions in selecting data and for helping me design the test matrix.

<sup>4</sup>My subjects were 25 English speakers who were from various universities of the United States. In the summer of 1971 they came to Wisconsin to attend Summer School. All of them were going to leave for India to stay there for a year after the completion of intensive language training. They were well-motivated and the perception test was presented on the last day of language training.

<sup>5</sup>Kim's explanation of aspirations differs from Lisker and Abramson in terms of underlying control mechanism. Kim agrees that aspiration is laryngeally controlled. But what is controlled by the laryngeal muscles in the case of aspiration is not the timing of glottal closing (Lisker and Abramson's view) but the size of the glottal opening.

Manjari and John Ohala refute Chomsky and Halle's claim that heightened sub-glottal air pressure is a necessary characteristic of all aspirated consonants. According to them, during h and upon the release of the aspirated stops there occurs a moment when there is no oral constriction and when the glottal resistance is markedly lower than that of normal voicing. Given such lowered resistance to the lung air, the air naturally rushes out in great volume, and consequently the air pressure just below the glottis is momentarily lowered.

<sup>6</sup>This paper has been accepted for presentation at the International Conference on Computers in the Humanities, University of Minnesota, to be held in July, 1973.

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Confusion by  
the native  
speakers

	k	kh	g	gh	c	ch	j	jh	T	TH	D	DH	t	th	d	dh	p	ph	b	bh	R	RH	NK	T.	c	
k	53	19	1	1																			1	22		0
kh	19	55	0	00																			1	20		0
g	2	0	55	17																			1	20		3
gh	0	2	10	63																			0	12		5
c					39	31	4	1															0	36		1
ch					12	63	0	0															0	12		0
j					0	0	63	6															0	6		3
jh					5	21	14	34															0	40		19
T									38	14	16	7											0	37		2
TH									16	45	10	4											0	30		0
D									0	0	60	15											0	15		0
DH									1	1	12	61											0	14		1
t													42	32	0	1							0	33		1
th													27	48	0	0							0	27		1
d													0	0	61	8							6	14		0
dh													5	5	6	58							1	17		0
p																	55	19	0	0			1	20		0
ph																	12	63	0	0			0	12		1
b																	3	1	66	5			0	5		2
bh																	1	1	8	65			0	10		3
R																										
RH																										

TABLE 1. Error Matrix for initial consonant. Maximum response number is 75

NK represents No Response  
TE represents Total Confusion

Confusion by  
the native  
speakers

	k	kh	g	gh	c	ch	j	jh	T	TH	D	DH	t	th	d	dh	p	ph	b	bh	R	NH	NR	TC
k	48	26	0	0																		1	27	
kh	19	56	0	0																		0	19	
g	1	0	66	8																		0	9	
gh	2	7	3	62																		1	13	
c					32	40	1	0														2	45	
ch					7	68	0	0														0	7	
j					2	0	60	13														0	15	
jh					4	23	10	38														0	37	
T									55	16	2	0										2	20	
TH									24	51	0	0										0	24	
D									1	0	50	23										1	25	
DH									2	0	12	61										0	14	
t													42	32	0	1						0	33	
th													20	54	0	1						0	21	
d													0	0	69	6						0	6	
dh													2	4	17	127						0	11.5	
p																	57	0	17	1		0	18	
ph																	10	65	0	0		0	10	
b																	0	1	63	10		1	12	
bh																	1	3	11	60		0	15	
R																					47	28	0	47
RM																					25	50	0	25

TABLE II. Error Matrix for Middle consonants. Maximum response number 75 (except dh = 150)

NR = No Response

TC = Total Confusion



	k	kh	g	gh	c	ch	j	jh	ɽ	TH	D	DH	t	th	d	dh	p	ph	b	bh	R	RH	NR	TC	b
k	34	39	0	2																			0	41	6
kh	14	63	1	0																			0	15	1
g	1	2	55	17																			0	20	17
gh	0	0	38	37																			0	38	34
c					42	30	2	0															1	53	26
ch					13	62	0	0															0	13	2
j					3	1	44	27															0	31	16
jh					1	0	25	43															0	26	11
ɽ																							1	41	6
TH										34	35	2	3										0	14	2
t										18	61	0	1										1	32	13
th														43	26	5	0						1	5	0
d														5	70	0	0						0	29	30
dh														2	0	46	27						0	18	22
p														1	1	16	57						0	18	
ph																		31	36	5	2		1	44	9
b																		1	74	0	0		0	1	8
bh																		0	0	30	44		1	45	17
R																		1	12	7	55		0	20	11
RH																						41	33	34	39
																						39	110	20	13

TABLE III. Error Matrix for final consonants. Maximum response number = 75 (except RH = 150)

NR = No Response

TC = Total Confusion

TABLE IV. Probable error matrix (for TABLE I, II, and III) for initial, middle and final consonants.

Consonants	First				Second			
	Probable		Error		Probable		Error	
	Initial position	Middle position	Final position	Combined Error	Initial position	Middle position	Final position	
k	kh	<u>kh</u>	<u>kh</u>	<u>kh</u>	<u>g/gh*</u>		<u>gh*</u>	
kh	k	<u>k</u>	<u>k</u>	<u>k</u>			<u>p*</u>	
g	gh	<u>gh</u>	<u>gh</u>	<u>gh</u>	k*	k*	kh*	
gh	g	kh	<u>g</u>	<u>g</u>	kh*	g		
c	<u>ch</u>	<u>ch</u>	<u>ch</u>	<u>ch</u>	j	j*		
ch	<u>c</u>	<u>c</u>	<u>c</u>	<u>c</u>				
j	jh	<u>jh</u>	<u>jh</u>	<u>jh</u>		c*	c*	
jh	ch	ch	<u>j</u>	<u>ch/j</u>	i	i	c*	
T	D	TH	TH	TH/D	TH	D*	DH*	
TH	<u>T</u>	T	<u>T</u>	<u>T</u>	D		DH*	
D	DH	DH		DH		T*		
DH	D	D		D	T/TH*	T*		
t	<u>th</u>	th	<u>th</u>	<u>th</u>	dh*	dh*	d	
th	<u>t</u>	t	<u>t</u>	<u>t</u>		dh*		
d	<u>dh</u>	dh	<u>dh</u>	<u>dh</u>			t*	
dh	d	d	<u>d</u>	<u>d</u>	t/th	th*	t/th*	
p	<u>ph</u>	b	<u>ph</u>	<u>ph</u>		bh*	b	
ph	<u>p</u>	p	<u>p*</u>	<u>p</u>				
b	bh	bh	<u>bh</u>	<u>bh</u>	p	ph*		
bh	b	b	<u>bh</u>	<u>b/ph</u>	p/ph*	ph*	b	
R		<u>RH</u>	<u>RH</u>	<u>RH</u>				
RH		<u>R</u>	<u>R</u>	<u>R</u>				

\*represents insignificant error (CONFUSION is 5% or less)

Underlined consonants are significant errors (CONFUSION is 33% or more)

TABLE V. Rank Order of the Perceptually Confused Consonants

One Feature	Initial Position	Middle Position	Final Position	Combined Rank Order
[- aspirate]	1	1	1	1
[+ aspirate]	2	2	2	2
[+ voiced]	3	3	3	3
[- voiced]	4	4	4	4

Two Features

[+ voiced + aspirate]	1	1	2	1
[- voiced - aspirate]	2	2	1	2
[+ voiced - aspirate]	4	3	2	3
[- voiced + aspirate]	2	4	4	4

TABLE VI: The two types of interaction is shown below (on the basis of First Probable Error):

1. between unaspirated and aspirated consonants.
2. between voiced aspirated and unvoiced aspirated consonants and unvoiced unaspirated and voiced unaspirated consonants.

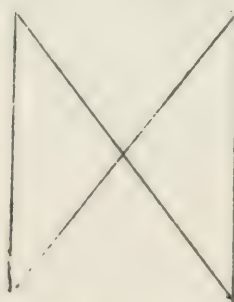
For example: Confusion /k/ and /kh/

(Diagonal indicates confusion of /g/ for /gh/ etc. and vice versa)

k,c,t,T,P

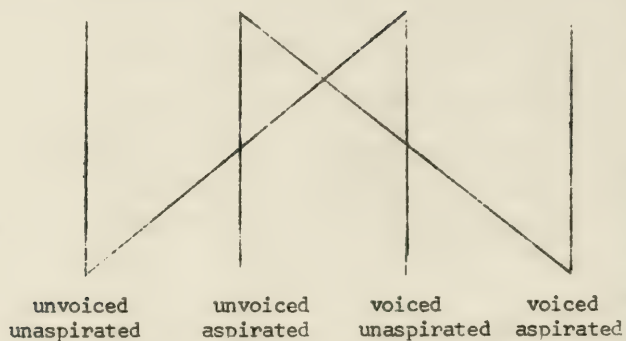
kh,ch,TH  
th, ph

g,j,D,d,b

gh,jh,DH  
dh, bhunvoiced  
unaspirated  
k,c,T,t,punvoiced  
aspirated  
kh,ch,TD  
th,phvoiced  
unaspirated  
g,j,D,d,b  
Rvoiced  
aspirated  
gh,jh,Dh,dh  
bh,RH

Confusion of /T/ for /D/

(/bh/ was mistaken for /ph/)



1. The straight lines indicate the correct-recognition of consonants.
2. Diagonals show confusion of sounds.

# EXCEPTIONS AND SYNCHRONIC ANALOGY IN SANSKRIT.<sup>1</sup>

Hans Henrich Hock

O.1: The problem of exceptions to otherwise productive phonological rules and of how to deal with them has for a long time and frequently attracted the attention of linguists. For while it is quite clear that some exceptions are too limited and idiosyncratic in occurrence to merit anything more than marking a given lexical item as an exception to a particular rule, in many other cases such an approach appears somewhat unsatisfactory because it fails to properly capture certain morphological regularities or principles which may in fact make the apparent exceptions quite regular and non-exceptional. This has been most plausibly argued in a recent paper ('A wider perspective on apparent phonological exceptions') which Karen Dudas and Margie O'Bryan read at the 1972 ISA Summer Meeting in Chapel Hill.

In the present paper I will refrain from going into a detailed discussion of the views presented in that paper (or in any other papers dealing with the subject). I will rather limit myself to the discussion of a specific case which, as far as I can see, is interesting and challenging in that none of the hypotheses so far proposed concerning the nature of morphologically predictable exceptions seems to be able to deal with it in a satisfactory manner.<sup>1a</sup>

I will propose that there is, however, a satisfactory manner in which this case can be dealt with, namely by invoking what I would like to call synchronic analogy.

O.2: The stage of the Sanskrit language with which the present paper is concerned can be labeled Late Vedic. It is the stage



of the language which post-dates the late Rig-Vedic change of iy and uv to y and v in the environment between (non-initial) single consonant and vowel; cf. vrkīyas > vrkyàs 'of a she-wolf'.<sup>2</sup> And it is the stage of the language which precedes the (optional) Epic and Classical replacement of root-final -ay- by -e- in the nominal -ya-formations (gerunds, gerundives, and derived nouns) of verbal roots in underlying root-final /-ai-/; cf. Brāhmaṇa jay-ya- 'to be conquered' vs. Epic, Class. je-ya- (id.), from /jai-/ 'conquer'; but also Brāhm. śay-ya- 'bed' and Class. -śay-ya- 'lying', from /śai-/ 'lie'.<sup>3</sup>

1.1: As all the other stages of Sanskrit, so also Late Vedic has a constraint against the occurrence of vowel clusters on the surface, at least in internal sandhi.<sup>4</sup>

On the other hand, again as all the other stages of Sanskrit, Late Vedic also has independently required underlying vowel clusters.

Thus, in past tense formations of vowel-initial roots, vowel clusters arise by the independently required prefixation of the 'augment' /a-/ before the root-initial vowel, as in /a-ad-ma/ 'we ate'.

Underlying vowel clusters are also required in the case of ('variable') formations which show surface alternations of the type i (~ iy) ~ y and u (~ uv) ~ v, the occurrence of one or the other of these alternants being determined by the phonetic environment. For there are other ('invariable') formations with invariable surface y and v, even in the phonetic environments where the 'variable' formations have phonetically conditioned iy and uv, and without any occurrence of surface i and u. Compare the difference between pl. 2 pres. ind. act. kr-ṇu-tha 'do', āp-nu-tha 'reach' (with u in the environment C \_\_\_\_ C) vs. kr-ṇv-anti



Like-Vowel Contraction in derivation (vii) is not simply a consequence of the number of vowels contained in the cluster can be seen in derivation (iii) which, like (vii), has a triple vowel cluster in the underlying representation.

(2) Elsewhere, Like-Vowel Contraction takes precedence over Glide-Formation; cf. derivation (iii).

(3) Glide-Formation is governed by the open-syllable or CVCVCV principle. That is, given a choice, that application of Glide-Formation is preferred which produces open, rather than checked syllables and which avoids the introduction of consonant clusters. Thus, derivation (vii) is acceptable, while a derivation /dhii-as/ --> dhyias\* would not be acceptable.

(4) Glide-Formation is constrained by 'Sievers's Law':<sup>9</sup> The derivation must not introduce a sequence containing a cluster of more than two consonants.<sup>10</sup> Thus, derivation (viii) below is acceptable, while derivation (ix) is not.

(viii) /kr-nu-anti/ --> kṛṇvanti 'they do'<sup>11</sup>

(ix) /aap-nu-anti/ -/-> āpnvanti 'they ob-

tain'

(c) Glide-Insertion:  $\emptyset \rightarrow \left[ \begin{array}{c} + \text{ glide} \\ \alpha \text{ front} \end{array} \right] / \left[ \begin{array}{c} \text{V} \\ - \text{ low} \\ \alpha \text{ front} \end{array} \right] \text{ — V.}$

This rule is a low-level clean-up rule eliminating any surviving vowel clusters, as in derivation (x) whose input 'survived' the other two rules eliminating vowel clusters: Like-Vowel Contraction because it is not applicable, and Glide-Formation because it is blocked by 'Sievers's Law'.

(x) /aap-nu-anti/ --> āpnu-v-anti.

1.3: In addition, the following rules operate on sequences containing underlying vowel clusters.

(d) i/u-Drop:

V - long + high x front	--> ∅ / VC ____	[+ glide x front]	V. <sup>12</sup>
----------------------------------	-----------------	----------------------	------------------

(xi) (/aa-dhii-as/ --&gt; /aa-dhiy-as/ --&gt;)

/ā-dhiy-as/ --> ādhyas 'of meditation'; cf. derivation (vii) above.(e) i-Elimination: i --> ∅ / y \_\_\_\_ C. This rule would at first blush appear to be optional; cf. the following derivation.

(xii) /bhāii-tum/ --&gt; /bhāyi-tum/ --&gt;

/bhay-tum/ beside unchanged bhayitum 'to fear'.(f) Diphthong Contraction: av --> o / \_\_\_\_ } C }  
ay --> e / \_\_\_\_ } # } where  
C ≠ y. Compare the following derivations.(xiii) /bhay-tum/ (from (xii)) --> bhetum.(xiv) /śrau-tum/ --> /śrav-tum/ --> śrotum 'to listen'.(xv) /-ay-ya-/ (from (vi) above) and /drau-ya-/ --> /drav-ya-/ 'to be run', however, remain as -ayya- and dravya-, since the consonant following the diphthong is y.<sup>13</sup>

2.1: While the above rules correctly relate the majority of underlying forms containing vowel clusters to their corresponding surface forms, and while the forms to which they apply are not limited to any specific morphological categories, but rather cover the whole wealth of nominal, pronominal, and verbal inflection and derivation, there are a few morphological categories where they exceptionally, but categorially predictably fail to apply, or apply in environments where they should not apply.

2.2: Thus, in the athematic middle voice optative, the first person singular, such as /aas-ii-a/ 'would sit', reg-

ularly fails to undergo Glide-Formation and i/u-Drop and to surface as āsyā\* etc. Instead, we find surface forms like āsīya.

2.3: Similarly, in the thematic optative, one should expect such forms as sg. 1 pres. act. opt. /bhar-a-ii-am/ 'would carry', pl. 3 pres. act. opt. /bhar-a-ii-ur/, and sg. 1 pres. mid. opt. /bhar-a-ii-a/ to undergo both expansions of the mirror-image rule Glide-Formation and to surface as bharayyam\*, bharayyur\*, bharayya\*, since before y, Diphthong Contraction is not applicable. Instead, we find surface forms like bhareyam, bhareyur, bhareya.

2.4: A similar situation is found in the comparative of the two roots, prī- 'dear' and śrī- 'beautiful': The underlying forms /praii-yas-/ and /śraii-yas-/ should, with application of Glide-Formation (hence /prayiyas-/ , /śrayi-yas-/ ) and i/u-Drop, yield the surface forms prayyas- and śrayyas-.<sup>14</sup> Instead, we find the forms preyas- and śreyas-.

2.5: While in derivations like (xii)/(xiii) above, the application of i-Elimination appears to be optional, permitting both surface forms like bhayitum and surface forms like bhetum, the rule appears to be obligatory in the superlative and in those forms of the thematic optative whose personal endings begin with a consonant.

Thus, underlying /praii-iṣṭha-/ 'dearest' and /śraii-iṣṭha-/ 'most beautiful', after undergoing a special rule affecting certain roots, the so-called seṭ-roots, and eliminating prevocalic underlyingly root-final i,<sup>15</sup> should with Glide-Formation, optional application of i-Elimination, and Diphthong Contraction surface either as prayiṣṭha-, śrayiṣṭha- or as preṣṭha-, śreṣṭha-; cf. the following sample



derivations. Late Vedic, however, only offers preṣṭha- and śreṣṭha-.

	/prai-iṣṭha-/	/prai-iṣṭha-/
Set-Rule	prai-iṣṭha-	prai-iṣṭha-
Glide-Formation	pray-iṣṭha-	pray-iṣṭha-
i-Elimination	-----	pray-ṣṭha-
Diphthong Contraction	-----	pre-ṣṭha-

Similarly, underlying forms like sg. 2 pres. mid. opt. /bhar-a-ii-thaas/ should be expected to surface both as bharayithās and as bharethās. However, only the latter type of forms is found.

2.6: On the other hand, in the infinitives of causative formations (and other formations with present suffix -aya-), such as /vardh-ay-i-tum/ 'cause to grow', no surface forms like vardhetum (with i-Elimination and subsequent Diphthong Contraction, as in preṣṭha- above) can be found. Instead, we only find forms like vardhayitum. That is, in these formations, i-Elimination obligatorily fails to apply.

3.1: Under the traditional approach to the treatment of exceptions, the above formations would simply be labeled exceptional. This might (or might not) be accompanied by a statement giving the presumable motivation for the exceptionality of a given formation.

3.2: Thus, in the case of the causative infinitives, it would probably be stated that they are categorial exceptions to i-Elimination. The motivation for this exceptional behavior could be given as the surface retention of the causative marker -ay- found elsewhere (as in the present vardh-ay-a-ti). For if i-Elimination had applied to the under-

lying /vardh-ay-i-tum/, the resulting /vardh-ay-tum/ would have been subject to Diphthong Contraction, yielding a surface form vardhetum, without the characteristic (surface) marker -ay-.

3.3: In the case of the superlatives and of the thematic optative forms with consonant-initial personal endings, it would probably be claimed that these formations as a category exceptionally undergo i-Elimination obligatorily. However, no motivation for this obligatory application of i-Elimination could be adduced.

3.4: As for the comparatives preyas- and śreyas- (instead of prayyas-\*, śrayyas-\*) and thematic optative formations like bhareyam, bhareyur, bhareya (instead of bharayyam\*, bharayyur\*, bharayya\*), it could be claimed that in these formations Diphthong Contraction applies exceptionally even in the environment before y (where normally it is blocked).

In the comparatives, the motivation for this exceptional application of Diphthong Contraction may be considered to consist in the fact that as a result the surface root vocalism of the comparatives becomes identical with that of the corresponding superlatives (where e is regular):  
pre-yas- = pre-ṣṭha-, śre-yas- = śre-ṣṭha-.

In the thematic optatives, the motivation for the exceptional application of Diphthong Contraction can be said to consist in the fact that as a result the surface thematic optative marker -e- (which is regular in those forms which have consonant-initial personal endings) prevails throughout the paradigm; cf. the following surface paradigms.

active	middle
<u>bhareyam</u>	<u>bhareya</u>
<u>bhares</u>	<u>bharethās</u>
<u>bharet</u>	<u>bhareta</u>
<u>bharema</u>	<u>bharemaḥi</u>
<u>bhareta</u>	<u>bharedhvam</u>
<u>bhareyur</u>	<u>bhareran</u>

3.5: Similarly, it would probably be claimed that the first singular athematic middle optative in /-ii-a/ is a categorical exception to Glide-Formation, that instead, it exceptionally undergoes Like-Vowel Contraction of /ii/ to /ī/ (in the environment before the unlike vowel /a/), and that subsequently the resulting vowel cluster /īa/ is eliminated by Glide-Insertion (whence surface -īya).

The motivation for this exceptional behavior can be said to consist in the fact that as a result the surface marker of the rest of the (athematic middle optative) paradigm prevails throughout the paradigm; cf. the following sample paradigm.

āsīya  
āsīthās  
āsīta  
āsīmahi  
āsīdhvam  
āsīran

4.1: While the 'exception hypothesis' discussed in sections 3.1-5 above may perhaps be considered to sufficiently account for the exceptional behavior of the causative infinitives, the superlatives and comparatives, and those forms of the thematic optative which have consonant-initial personal endings, it fails to satisfactorily account for the

exceptional behavior of the first singular athematic middle optative and of those forms of the thematic optative whose personal endings begin with a vowel.

4.2: As far as the (perhaps rather trivial) aspect of formalism is concerned, the following two problems arise.

(a) Which morpheme(s) should be marked for the exceptional behavior of the thematic optative, the thematic vowel /-a-/ or the optative marker /-ii-/? After all, both suffixes are involved in the exceptional contraction of /-a-yy-/ to -ey-.

(b) Perhaps more importantly, if the optative marker /-ii-/ is marked as [- Glide-Formation] and [+ Like-Vowel Contraction (/\_\_ unlike vowel)] in order to account for the exceptional behavior of the first singular of the athematic (middle) optative, this marking would wrongly predict that in the thematic optative, underlying /-a-ii-am/ (etc.) should develop into /-a-ĩ-am/, rather than the /-ayyam/ required by the surface form -eyam.

4.3: What is, however, of much greater importance than these 'formalistic' objections (which could probably be met by some kind of ad-hoc formulations) is the fact that the 'exception hypothesis' fails to make the generalization that the motivation for the exceptionality of forms like āsīya is the same as that for the exceptionality of forms like bhareyam, namely the avoidance of surface alternations in the optative marker (within the same paradigm).

And because of the disparate nature of the exceptional behavior of the two types of formations -- there is not even a single rule which these two formations agree on exceptionally applying or failing to apply -- the failure of the (traditional) 'exception hypothesis' to capture this

generalization would seem to be inherent and inevitable.

5.1: A new concept appears to be required in order to satisfactorily capture the generalization that the same motivation underlies the (disparate) exceptionalities of the athematic middle optative and of the thematic optative.

This new concept, I submit, is synchronic analogy: a morphological principle (which evidently cannot be captured by a (single) rule !), stating (in this particular case) that 'In the athematic middle optative and the thematic optative, the regular surface marker of the majority of forms (i.e. of forms which have a consonant-initial personal ending) is to prevail throughout the paradigm.'

This morphological principle, then, governs (or entails) the exceptional application or nonapplication of rules, in this particular case, the exceptional nonapplication of Glide-Formation and the exceptional application of Like-Vowel Contraction in the first singular of the athematic middle optative, and the exceptional application of Diphthong Contraction in the first singular active and middle and the third plural active of the thematic optative.

5.2: Consideration of additional data would seem to confirm the view that the present approach is on the right track:

In the (athematic) verbs in underlying /-(n)au-/ --> /-(n)u-/ by Ø-grade formation, the following middle optative paradigms are found.

kr̥ṇvīya

kr̥ṇvīthās

kr̥ṇvīta

kr̥ṇvīmahi

kr̥ṇvīdhvam

kr̥ṇvīran

āpnuvīya

āpnuvīthās

āpnuvīta

āpnuvīmahi

āpnuvīdhvam

āpnuvīran



The corresponding underlying forms are as follows.

/kr-nu-ii-a/	/aap-nu-ii-a/
/kr-nu-ii-thaas/	/aap-nu-ii-thaas/
etc.	etc.

These should, by regular application of rules, yield the surface forms indicated in the following derivations.

	/kr-nu-ii-a/	/aap-nu-ii-a/
Like-Vowel Contr.	-----	(āp-nu-ii-a)
Glide-Formation	<u>kr̥nuyya</u> * <sup>16</sup>	<u>āpnuyya</u> * <sup>16</sup>
	/kr-nu-ii-thaas/	/aap-nu-ii-thaas/
Like-Vowel Contr.	(kr-nu-ii-thās)	(āp-nu-ii-thās)
Glide-Formation	<u>kr̥nu-yi-thās</u> *	<u>āp-nu-yi-thās</u> *
(i-Elimination) <sup>17</sup>	<u>kr̥nuythās</u> * <sup>18</sup>	<u>āpnuythās</u> * <sup>18</sup> )

As in the case of the athematic middle optative forms so far discussed, so also here, the actually attested surface forms can be derived by the exceptional application or nonapplication of Like-Vowel Contraction and Glide-Formation. However, because of the different phonological environment(s), different segments (namely the first /i/ of the optative marker /-ii-/), an additional morpheme (namely /-(n)u-/, at least where 'Sievers's Law' permits), and additional persons of the paradigm (sg. 2 - pl. 3) are affected by the exceptional (non-)application of Glide-Formation.

Still, the principle motivating this exceptional (non-) application of rules is essentially the same as before, namely that 'In the athematic middle optative and the thematic optative, the regular surface marker of the majority of forms (i.e. of the forms which have consonant-initial personal endings) found in the majority of subclasses (i.e., in the athematic verbs, in all subclasses other than the

(n)u-verbs) is to prevail throughout the paradigm(s of all the subclasses).'

5.3: Since the new concept of synchronic analogy was clearly needed in order to make the correct generalizations about the motivation of the exceptional (non-)application of rules in the optative formations so far discussed, the question arises whether it should be invoked in all cases where the exceptional application or nonapplication of rules can be attributed to such a general morphological principle.

There are some indications that to do so would at least be heuristically useful, in that it would force the phonologist to more strongly consider morphological evidence in phonological analysis.

Thus, in the case of the discrepancies between the apparently optional application of i-Elimination in infinitives of the type /bhāii-tum/ --> bhayitum/bhetum, the obligatory nonapplication in causative infinitives (/vardhay-i-tum/ --> vardhayitum), and the obligatory application in the thematic optative (/bhar-a-ii-thaas/ --> bharethās) and the superlative (/praii-iṣṭha-/ --> preṣṭha-), the concept of synchronic analogy seems to facilitate a clearer understanding of the phonological facts:

In the case of the causative infinitives, the nonapplication of i-Elimination can be motivated, namely as due to the principle that 'In the causatives, the marker /-ay-/ found in the majority of forms is to prevail also in the infinitive.' That the nonapplication here is obligatory can be attributed to the fact that the principle is strong because the synchronic analogy works within the paradigm.

Also in the case of infinitives like /bhāii-tum/ --> bhayitum/bhetum, the nonapplication of i-Elimination can be motivated, namely as due to the synchronic analogy of the

infinitives of other 'seṭ-roots',<sup>19</sup> which, because they do not meet the environment for the rule, cannot undergo i-Elimination; cf. /bhauī-tum/ --> bhavitum 'be(come)'. That is, the nonapplication of i-Elimination in these infinitives can be attributed to the principle that 'In the infinitives of seṭ-roots, the underlying characteristic /i/ of the seṭ-roots is to remain on the surface.' In contradistinction to the principle governing the nonapplication of i-Elimination in the causatives, the present principle is weak (hence only optional) because the synchronic analogy works on derivationally (and underlyingly) parallel formations, not within the paradigm.

As for bhetum, as well as the thematic optative (cf. bharethās) and the superlative (cf. preṣṭha-), no morphological principle or synchronic analogy can be found which would motivate the application (or nonapplication) of i-Elimination. This fact can be taken to indicate that these formations show the unmarked, morphologically ungoverned application of rules. It can therefore be concluded that i-Elimination in fact is not optional (as thought earlier), but that in principle it is obligatory (unless overridden by synchronic analogy).

(Also in the case of the comparatives preyas-, śreyas-, the exceptional application of Diphthong Contraction can be attributed to synchronic analogy, namely the principle that 'The comparative (of prī- and śrī-) is to have the same surface root shape as the superlative.' However, in this case, the concept of synchronic analogy does not seem to lead to any greater insights or more accurate generalizations than the traditional 'exception hypothesis' formulation.)

5.4: Although the concept of synchronic analogy thus does appear to be heuristically more useful than the traditional treatment of exceptions, by greatly facilitating a clearer understanding of the facts, it cannot be claimed that a proper understanding of the facts, or at least the proper formulation of the facts, is impossible under the traditional, morphologically 'motivated' approach. For once the correct insights have been made, it is quite possible to account for the facts by stating that *i*-Elimination is an obligatory rule, but that, for morphological reasons, set-roots are optional, and causatives, obligatory exceptions to it.

5.5: It can thus be concluded that it is only under certain, very special circumstances, such as the disparate exceptionalities of the athematic middle optative and of the thematic optative, that the concept of synchronic analogy is clearly required (in order to capture the correct generalizations). Elsewhere, the concept, though in some cases probably heuristically more useful, is in effect merely a 'notational variant' of the traditional, morphologically 'motivated' treatment of exceptions.

#### FOOTNOTES

- 1 An earlier version of this paper was read on December 21, 1972, before the Linguistics Seminar of the University of Illinois. At the next meeting of the Linguistics Seminar, on January 4, 1973, Ronnie Wilbur read a paper ('An alternative to phonological description: morphological explanation', a summary of her 1973 University of Illinois Ph.D. dissertation = Wilbur 1973 [a revised version of this paper appears as one of the contributions to the present volume]),



in which, on the basis mainly of cross-language evidence, she came to essentially the same conclusions as those which, in the present paper, have been reached on the basis of the language-internal evidence of Sanskrit. The fact that thus essentially the same conclusions were reached independently, by two different linguists, working with quite different data, is remarkable and would seem to further support the view that these conclusions must be on the right track. (For specific Sanskrit evidence, not considered by Ronnie Wilbur, in favor of her claim that an 'identity constraint' or, in my terminology, 'synchronic analogy' may govern the (exceptional) application or nonapplication of phonological rules in the derivation of reduplicated formations, cf. fn. 13 below.)

1a Except, of course, for Wilbur 1973; cf. the preceding footnote.

2 Concerning the appearance of the first traces of this change in the late first and tenth books of Rig-Veda, cf. Renou 1957:4 and Wackernagel 1896:288. -- For the discussion in the present paper it is of crucial importance that this change, and the attendant changes in synchronic rules and underlying representations, be completed. As a result, the synchronic claims made in this paper will by necessity have to be different from those which were made in Kiparsky 1972 on the basis of 'pure' Rig-Vedic evidence. A critical discussion of Kiparsky's views and a comparison of his claims with those made in this paper would therefore appear to be pointless.

3 There is, to be sure, one (early) Late Vedic instance of a nominal -ya-formation with root-final surface -e-, namely pra-he-yā (AV 5:10:3c), instead of expected pra-hay-yā\*. However, this may perhaps be due to a later emendation. Compare on this count the Rig-Vedic occurrence of saha-śey-yāya (RV 10:10:7b), whose -ey-y- could perhaps, a priori, be considered the result of a genuine historical process of blending older -ay-y- with innovated -e-y-. However, metrical evidence -- the word occurs in the cadence of a triṣṭubh -- indicates that the word must be read as -śāyiyāya, with an extra syllable (and consequently with differing root vocalism) and that the attested -śeyyāya, along with its root vocalism, thus clearly is the result of a later emendation.



4 The surface diphthongs which customarily are transliterated as ai and au are apparent exceptions to this constraint. However, it is quite reasonable to assume that the second element of these diphthongs was semivocalic [i], [u], rather than fully vocalic [i], [u]. Cf. Wackernagel 1896:40 for examples which seem to indicate that, at least before a following y, ai was pronounced with a semivocalic offglide. -- Note, however, that some vowel clusters do occur on the surface in external sandhi; cf. puruṣa uvāca 'the man spoke' from underlying /puruṣa-s u-uak-a/.

5 It is beyond the scope of the present paper to discuss (the motivation of) independently required underlying forms and phonological developments which are not germane to the discussion of this paper. Here, as elsewhere, I will therefore refrain from commenting on such differences between underlying and surface forms as those between /kr-nu-tha/ (with nonsyllabic r and nonretroflex n) and surface kr̥nutha (with syllabic r̥ and retroflex ṇ).

6 These rules can thus be said to 'conspire' to eliminate vowel clusters on the surface. For a definition of the term 'conspire', cf. Kisseberth 1970.

7 For the motivation of the underlying sequence, rather than feature representation of vowel length, cf. derivation (vii) which clearly presupposes segment representation. On the general problem of the representation of vowel length in generative phonology, cf. Kenstowicz 1970.

8 From the same root as that found in i-ta-. Underlying /ai-/ and /i-/ are related to each other by the morphophonemic process of ablaut.

9 This is the (indirect) synchronic reflex of the historical process called 'Sievers's Law'.

10 Glid-formation (of u) is also blocked after single initial y and r, since yv-\* and rv-\* are nonpermissible clusters (in initial environment); cf. pl. 3 /yu-anti/ 'unite' --> yuvanti (not yvanti\*), /ru-anti/ 'they say' --> ruvanti (not rvanti\*). -- 'Sievers's Law' also applies to ablaut; cf. the n-stem genitive ān-rā 'of a king' (with Ø-grade of the stem-forming suffix /-an-/) vs. ātman-as 'of the spirit' (without Ø-grade, since the application of Ø-grade formation would produce the triple con-

sonant cluster -tmn-). Actually, note that in ablaut, there is a constraint also against the introduction of initial clusters containing two consonants; cf. the nonapplication of Ø-grade formation in the participle pan-na- 'fallen' (of the root /pad-/) vs. its regular application in the participles of roots whose underlying form is not of the shape /CaC-/, as in i-ta- 'gone' (of the root /ai-/). -- It is true, it might be claimed that in all of these cases we are dealing with epenthetic vowels, rather than with vowels which failed to undergo a particular derivation because undergoing it would have resulted in a nonpermissible cluster. However, first of all, if we were really dealing with epenthesis, then the remarkable fact that the epenthetic vowel always is identical with the underlying vowel which allegedly was eliminated by an earlier rule would have to be attributed to mere coincidence. More importantly, in the case of underlying /i/ and /u/, it can be shown that the surface appearance of these vowels after consonant clusters cannot be the result of epenthesis before y and v. For if such an epenthesis were indeed a regular process in the language, motivated by a general constraint against clusters of more than one consonant, then one would expect epenthesis to apply also in the case of such formations as /vardh-sya-ti/, yielding surface varts-i-yati\*, rather than the actually attested vartsyati 'will turn'. (To claim that epenthesis is a global rule which applies only in those cases where an underlying vocalic segment has been eliminated by an earlier rule, thus leading to a violation of 'Sievers's Law', would seem to be merely begging the question.) -- Note that, as /vardh-sya-ti/ --> vartsyati and many similar forms show, 'Sievers's Law' is a constraint on phonological (and morpho-phonemic) derivations, not on underlying (or surface) representations.

11 Note that a low-level rule converts the high back glide into a voiced bilabial or labiodental fricative. The difference between the earlier (derived) glide and the surface fricative will in this paper be disregarded, the symbol y being used to refer to both.

12 In the verbs, this rule may optionally also apply after single initial consonant, as in /vii-anti/ 'they lead' --> /viyanti/ --> vyanti; /huu-aya-ti/ 'calls' --> /huvayati/ --> hvayati.

13 In external sandhi, to be sure, Diphthong Contraction does take place also before y; cf. /daivāya#iyam/ --> devāyeyam 'to the god she ...', /satrau#ayam/ --> śatroyam 'O enemy, he ...'. However, this is of no relevance to the present discussion which centers only on internal sandhi rules. -- In internal sandhi, only two exceptions occur in Late Vedic, namely the reduplicated intensives yo-yuv-at (from yu- 'unite; separate') and yo-yup-yate (from yup- 'obstruct'). These are no doubt to be explained along the lines of Wilbur 1973, namely as owing their contracted o to the influence of the other reduplicated intensives from roots containing an underlying /u/, such as śo-śuc-a- (from śuc- 'gleam') and to-tud-ya- (from tud- 'push'). -- Note that the e in some other forms containing surface -ey-, most notably in gerundive (and other verbal) forms like -deya- 'to be given' (from dā-) can, in Late Vedic, not be considered to be of (underlying) diphthongal origin, since at this stage of the language there is no independent evidence for a gerundive suffix /-iya-/ (or for an /-i-/ which could be said to intervene between the root-final /-ā-/ and the initial /-y-/ of the suffix /-ya-/) whose /i/ --> /y/ could merge with the preceding /ā/ into surface e. What we seem rather to be dealing with is a morphophonemic replacement of root-final /-ā-/ by /-e-/ before (certain) suffixes beginning with /y/.

14 Speakers for whom the surface superlative suffix -iṣṭha- is segmentable as -iṣ-ṭha- and thus relatable (by Ø-grade formation and the well-known Ruki-Rule) to the surface comparative suffix -yas- would, of course, have to have an underlying comparative suffix /-ias-/ in order to account for the surface alternation between (comparative) -y- and superlative -i-. However, after application of Glide-Formation, these speakers will have the same intermediate forms (/prayiyas-/ , /śrayiyas-/) as speakers who do not relate the suffixes and thus have underlying /-yas-/ in the comparative.

15 I hope to discuss this rule in a future paper dealing with the general problems involved with the phonological derivation of set-root formations. In the meantime, compare the following derivations illustrating the independent justification of the special set-rule under discussion. /bhau-i-tum/ (inf.) 'be(come)' --> bhavitum vs. /bhau-i-a-ti/ (sg. 3 pres. act. ind.) --> bhavati (not bhavyati\* with retention of root-final i and Glide-Formation). Similarly, the third singular present middle corresponding to the infinitive bhayitum/bhetum (from /bhai-i-tum/) is /bhai-i-a-tai/

--> bhayate (not bhayyate\*).

16 Perhaps, however, one should expect kr̥ṇviya ? (A corresponding ap̥ṇviya\* would, however, be blocked by 'Sievers's Law'.) Either way, the regular application of rules would not produce the actually attested kr̥ṇviya, āp̥ṇviya.

17 Recall that i-Elimination was earlier defined as an optional rule. (But compare section 5.3 below.)

18 A surface sequence uy does not appear to be otherwise attested before consonant (or word boundary). The fact that in the pronoun stem /amu-/ 'that', the underlying plural stem /amu-y/ surfaces as amī(-) before consonant and word boundary might perhaps be taken to indicate that /uy/ contracts to ī before consonants and word boundary. In that case, one would expect the surface forms kr̥ṇithās\*, āp̥ṇithās\* which, of course, still do not agree with the actually attested forms.

19 For the purposes of the present discussion, set-roots can be defined as roots which in their underlying guṇa form are of the shape (consonant) + a + high vowel or liquid or nasal + i.

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OPACITY AND THE LOSS OF A MORPHOLOGICAL PROCESS

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1.1. It has been proposed by Kiparsky (1971) that the principle of transparency/opacity plays an important role in different aspects of the grammars of languages. This paper will focus narrowly on one of these aspects, namely, the role which opacity plays in rule loss. Although it seems clearly to be the case that opacity is one of the factors which can lead to rule loss, detailed investigations of actual cases, in which the specific nature of the opacity involved is isolated, are in general lacking. And, to my knowledge, there has been no discussion of opacity with regard to morphological processes. Such investigations are needed if we are to make any significant progress in our understanding of the causes of (and thus the nature of) rule loss; for, as is the case in nearly every area of linguistics, too often conclusions concerning the nature of some aspect of language are based on a relatively superficial look at synchronic structure.

It is thus the purpose of this paper to present a detailed examination of certain changes which occurred between Old and Middle Indic and to show how these changes led to interactions between the old and new processes, causing an entire morphological process to be lost. Hopefully, this investigation will be a step in the direction of shedding some light on the nature of the processes mentioned above.

2.1. Between the periods of Old Indic and Early Middle Indic (represented here by Sanskrit and Pali respectively) certain changes occurred which can be described in general terms as processes tending toward simplification.

2.1.1. One of these simplificatory processes assumed the form of severe surface constraints on consonant clusters and on syllable structure in general. These constraints are the following. (1) Unlike obstruents are not tolerated, their occurrence being avoided by the assimilation of one to the other;<sup>1</sup> in sequences of nasal plus obstruent, the nasal becomes

homorganic to the following obstruent; (2) syllables of more than two moras are not permitted. A two-mora syllable is one which consists of a short vowel in a closed syllable, a long vowel in an open syllable, a nasalized vowel. Thus, in Pali, there can occur no long or nasalized vowels in closed syllables.

2.1.2. In addition to the above changes which affected syllable structure, several other changes occurred which had the end result of a restructuring of verbal roots.<sup>2</sup> This restructuring was such that the present stem is, in all cases, the underlying verbal root. This represents a quite different situation from that which exists in Sanskrit, where, for (nearly all) verbal roots there is one particular ablaut grade, namely full-grade root vocalism, which can be taken as basic and from which the other ablaut grade, namely,  $\emptyset$ -grade root vocalism, can be derived.<sup>3</sup> Furthermore, in Sanskrit, it is not the present stem, but the bare root, which is used in verbal categories outside of the present system (except in cases where the present stem consists simply of the root). The following examples illustrate some of the differences between Sanskrit and Pali roots.

<u>Sanskrit Root</u>	<u>Present Stem</u>	<u>Pali Root</u>	<u>Present Stem</u>
nod-	nud-a-	nud-	nud-a- <sup>4</sup>
peṣ-	pi-na-s-	pis- <sup>5</sup>	pis-a-
naś-	naś-ya-	nass- <sup>6</sup>	nass-a-
kop-	kup-ya-	kupp-	kupp-a-
man-	man-ya-	maññ-	maññ-a-
pad-	pad-ya-	pajj-	pajj-a-
lobh-	lubbh-no-	lubbh-	lubbh-a-

3.1. One of the characteristic features of Pali is the existence of two competing verbal derivational processes, one being an older type of process consisting of root ablaut and (usually) assimilation of the root-final and suffix-initial consonants (and necessitated by the continuing existence of forms inherited from Sanskrit), and the other being an innovating type of process consisting of the use of the unaltered underlying

root.

3.2. Although Pali makes use of both types of derivational processes just described, the language is nevertheless characterized also by the rather widespread replacement of the older type with the newer. Thus, we find many new verbal formations composed of the present stem (i.e. the Pali underlying root), unaffected by either  $\emptyset$ -grade or full-grade root alteration. This use of the underlying root is often accompanied by insertion of the vowel i between the root-final and suffix-initial consonants. In fact, in Pali, i-insertion applies (nearly without exception) exclusively to verbal formations consisting of the underlying root.<sup>7</sup> The following examples illustrate the tendency in Pali toward use of the underlying root and i-insertion.

<u>Sanskrit</u>	<u>Pali</u>	<u>Verbal Category</u>
mudita /mod-/	modita /mod-/	participle
iṣṭa /yaj-/	yajita /yaj-/	participle
mata /man-/	maññita /maññ-/	participle
bhoktum /bhoj-/	bhuñjītum /bhuñj-/	infinitive
jēṣya- /jai-/	jayissa- /jai-/	future
chetsya- /ched-/	chindissa- /chind-/	future

The degree of extension of this newer process in the verbal categories of Pali is, however, quite asymmetrical, for, in most categories characterized (historically) by full-grade root formation, the new process has taken over nearly completely, while in the  $\emptyset$ -grade categories, many inherited formations remain, the new process having spread only to a limited degree. This asymmetry is of significant interest, for languages normally experience gradual loss of morphological processes throughout the development of several stages before the change is complete.

The situation as it exists in the  $\emptyset$ -grade categories would then seem to represent the result of a somewhat 'normal' course of development between two stages of a language, while that of the full-grade categories appears to be 'abnormal' and to thus warrant investigation. In the remainder of this paper, the changes will be examined which led to the (incipient) loss of ablaut in the (former) full-grade categories.

4.1. The restructuring of verbal roots (discussed above) caused some significant differences in verbal derivation in Pali from that of Sanskrit. The reason for this is that (as noted above) many inherited forms are still in use in Pali and must be derived from (in many cases) new underlying roots.

4.1.1. Even though there were various reinterpretations in verbal derivation, both phonological and morphological, the one which is most relevant to the thesis of this paper is that which took place in the derivation of causatives. The following examples will serve to illustrate the formation of causatives in Pali.

<u>Root</u>	<u>Causative Stem</u>
kupp-	kop-e-
kos-	kos-e-
vah-	vāh-e-
nass-	nās-e-
pajj-	pād-e-
vijjh-	vedh-e- <sup>8</sup>

From these examples, it appears that causatives are formed with full-grade root vocalism (in Sanskrit terms) in the case of roots in i/e and u/o (cf. fn. (3)) and by long ā in the case of roots in ā. Causatives formed from roots in two final consonants are in an impermissible shape after full-grade formation applies, since the two-mora constraint prohibits long vowels in closed syllables.<sup>9</sup> In causatives, the problem of the overly heavy structure is always resolved by simplifying the final consonants rather than by shortening the vowel, thereby preserving the long full-grade vowel--the marker of this category.

As is implicit in footnote (3), the full-grade formation process in Sanskrit did not include the lengthening of a. The lengthening of this vowel in causatives is actually a leftover of a historical process known as Brugmann's Law. In Sanskrit causatives, most a's are lengthened when they occur in open syllables: e.g. nād-aya- (nād-), but vart-aya- (<vart-). (The causative suffix -aya- has contracted to -e- in Pali). This lengthening is limited to certain categories due to the fact that



Indo-European o became ā in Indo-Aryan in non-final open syllables. Causative formation was characterized historically by the root vocalism o, and lengthening of a in Sanskrit causatives was thus probably felt to be connected to open syllables.<sup>10</sup>

In Pali, however, due to the restructuring of verbal roots (discussed above), there are a number of roots ending in two consonants which in Sanskrit ended in a single consonant: Skt. pad-, Pa. pajj-; Skt. naś-, Pa. nass-; Skt. kop-, Pa. kupp-; Skt. man-, Pa. maññ-, etc. Thus, Sanskrit roots like pad- and naś- meet the environment for lengthening of a in their causative formations: pād-aya-; nāś-aya-. In Pali, however, these inherited causative formations cannot be interpreted as being derived in such a manner, for the root vowels now occur in closed syllables: /nass-e-/(→ /nāss-e-/.<sup>11</sup> There seems at this stage of the language to be no particular environment with which to define the lengthening of a, this lengthening occurring in both open and closed syllables: /nass-e-/(→ /nāss-e-/ just as /vah-e-/(→ /vāh-e-/. The most logical manner of interpreting the lengthening of a would, then, seem to be as part of the full-grade formation process. This reinterpretation of the lengthening of a enables us to characterize causatives as being formed by a general strengthening of the root vowel whenever possible (that is, if the underlying vowel is not already e, o, or ā). Just as the underlying vowels i and u are strengthened by the addition of the vowel a, likewise, we can say that the underlying vowel a is strengthened by the addition of a. The aa sequence then contracts, just as do the diphthongs ai and au, the difference, of course, being that aa contracts simply to a long vowel of identical quality, whereas ai and au contract to vowels of different quality: /nass-/(→ /naass-/(→ /nāss-/, just as /kupp-/(→ /kaupp-/(→ /kopp-/. The inclusion of a-lengthening in the full-grade formation process seems, at this point, to be a simplification in the grammar, for now the full-grade process has become more general and can apply in an identical manner to all three underlying vowels (i, u, a).

4.2. The types of causative formations referred to in footnote (10), while they have to be considered exceptional in Sanskrit, fit nicely into the system as it exists in Pali. Recall that the derivational system of Pali is characterized by two competing processes--the old derivational process, characterized by root ablaut, and the newer process, characterized by the use of the unchanged underlying root (usually accompanied by i-insertion in categories with consonant-initial suffixes). Thus, since lengthening of a is part of the full-grade formation process in Pali, the forms inherited with short a can be interpreted as being formed simply from the unaltered underlying root: e.g. vame- (<vam-), just like vijjhe- (<vijjh-), a new formation in Pali, made from the underlying (Pali) root and occurring beside the inherited form vedhe-, which has undergone full-grade formation.

5.1. The (historical) full-grade categories with consonant-initial suffixes include the infinitive (with the suffix -tum); the future passive participle (with the suffix -tabba); the agent nouns (with the suffix -tar); the future (with the suffix -ssa-). As was noted in 3.2., in these categories, we find only a few inherited forms remaining which display full-grade root vocalism and assimilation of the root-final and suffix-initial consonants. Rather, the large majority of forms consist of the unaltered (Pali) underlying root and the inserted vowel i. The inherited forms which do remain provide important insights, however, into the nature of the processes involved in deriving these forms (i.e. in relating them to the restructured roots) and into the factors which caused the (incipient) loss of the full-grade process in these categories. Following are examples of the types of inherited forms found in the categories cited immediately above.

I. Roots of the shape / (C)  $\check{V}$ C-/

	<u>Pali Root</u>	<u>Full-grade Form</u>		<u>Gloss</u>
		<u>Pali</u>	<u>Sanskrit</u>	
a.	sās-	satthar-	śāstr-	instructor
	har-	hattar-	hartr-	destroyer
	har-	hattuṃ <sup>12</sup>	hartum	take, carry
	kar-	kattum	kartum	do, make
	es-	eṭṭhum	eṣṭum	seek
	phus-	phoṭṭhabba <sup>13</sup>	spraṣṭavya	touch
	labh-	laddhum	labdhum	obtain
	vas-	vatthum	vastum	dwell
	han-	hantabba	hantavya	strike
	kar-	kassa-(fut.)	_____ <sup>14</sup>	do, make
	suṇ-	sossa-(fut.)	śroṣya-	hear
b.	kar-	kātuṃ	_____	do, make
	kar-	kāsa-(fut.)	_____	do, make
	kiṇ-	ketuṃ	kretum	buy
	har-	hātuṃ	_____	take, carry
	suṇ-	sotum	śrotum	hear

II. Roots of the shape / (C)VCC-/

a.	vatt-	vattar-	_____	one who overcomes
	vatt-	vattabba	_____	overcome
	chind-	chettar-	chettr-	destroyer
	bujjh-	boddhum	boddhum	awake
	bhind-	bhattar-	bhettr-	one who splits
	bhuñj-	bhottum	bhoktum	eat, enjoy
	maññ	mantar-	mantr-	thinker
b.	chind-	chetum	_____	destroy
	chind-	chetabba	_____	destroy
	bujjh-	bodhum	_____	awake

There are two basic root types represented in the above examples:

(C)VC-; (C)VCC-. From these two root types, we find surface forms consisting of a short root vowel followed by two consonants (those in group (a)) and forms consisting of a long root vowel followed by a single consonant (those in group (b)).<sup>15</sup> Thus, the shape of the underlying root seems, at first glance, at least, to have no effect on the eventual surface shape of these forms.<sup>16</sup>

5.2. Comparison of the examples given above in 4.1.1. reveals considerable differences in the surface shapes of these forms from those found in the causatives. It will be recalled that whenever causatives are formed by application of full-grade formation to the root, it is the full-grade vowels which appear, unaltered, in the causative: e.g. /kupp-/ → /kōpp-/ → /kōp-/, not /kōpp-/ → /kōp-/.<sup>17</sup> In the full-grade categories being considered presently, however, the majority of forms appear with short ě, ō, and ǎ followed by two consonants, rather than with long ē, ō, and ā followed by a single consonant, as was the case with causatives.

5.3. Before discussing the above problems, it is appropriate to consider the question of whether lengthening of a is part of the general full-grade formation process or whether it is restricted to causatives, since in the full-grade categories with consonant-initial suffixes, the root vowel is nearly always short on the surface, and there is thus no surface trace in such forms of lengthening of a having taken place. The following factors, however, speak in favor of considering the lengthening of a to be part of the general full-grade formation process.

5.3.1. First of all, it is logical that lengthening of a which occurs in causatives, since this lengthening is not dependent on any particular phonological environment and since causatives are traditional full-grade formations, would be applied to other categories in which the forms otherwise display full-grade root vocalism.

5.3.2. Secondly, there are roots of the shape CaCC- which have not undergone i-insertion: e.g. vattar- </vatt-tar-. Now elsewhere in Pali, i-insertion applies regularly to forms composed of an underlying root in two final consonants followed by a suffix-initial consonant.<sup>18</sup> Thus, we can assume that the above types of forms have undergone full-grade formation

(i.e. lengthening of a), thus preventing them from undergoing i-insertion, since the root would no longer be in its underlying shape (e.g. /vatt-tar-/ → (full-grade) /vātt-tar-/ (cf. 3.2.). (The manner in which the vowel is then shortened will be discussed below.) It might, however, be argued that such forms are ambiguous as to the type of derivation which they should undergo and thus cannot be used as evidence for lengthening of a being part of the general full-grade formation process. For, they could be derived simply from the underlying root, without full-grade root alteration. Derived in this latter manner, however, these forms would be exceptions to i-insertion, and it seems to me that, given the regularity of i-insertion elsewhere in this context, speakers would not derive these 'ambiguous' surface forms in a manner which would cause them to be exceptions, but rather would assume that they have undergone morphological vowel lengthening, thus imposing a regular derivation on them.

5.3.3. Thirdly, the root har- has an infinitive form with long ā: hātum, and the root kar- has both an infinitive and a future showing this latter type of formation: kātum; kāsa- (</kar-ssa-/). The exact reasons for why this lengthening originally took place are unclear. Synchronically, however, there is virtually no doubt that these forms would be interpreted as representing lengthening of a as a full-grade process. This interpretation is aided not only by the first two factors given above, but also by the fact that the root kar- is one of the most basic and most frequently used verbs in the language. Lengthening of a in verbal forms of this root is thus very important, as it would logically exert a great deal of pressure on the derivation of verbal forms from other roots.

Combining the three facts just discussed, it appears, then, that there is sufficient motivation for the lengthening of a being interpreted as part of the general full-grade formation process.

5.4. Returning now to the discussion of full-grade forms with short root vowels followed by two consonants, it appears that such forms necessitate a derivation which is directly opposed to that which seemed to be necessary for causatives. The question is then why the long full-grade vowel (the marker of these categories) would not be preserved in the three



categories presently under discussion, just as it is in the causatives. To answer this question, it is necessary to compare causative formation with that of the other full-grade categories.

Examination of the derivation of forms from roots of the shape CVCC- reveals that the first type of simplification which occurs can be assumed to be identical to that of deriving causatives. Since roots of the shape CVCC- which undergo morphological full-grade formation always have causatives with the root shape CVC-, we can assume that this rule which operates to simplify root-final consonants in causatives operates on all forms which have the shape CVCC- at this point in the derivation: /bhōñj-tum/→/bhōj-tum/; /māññ-tar-/→/mān-tar-/; just like /bhōñj-e-/→/bhōj-e-/. However, it is at the point in the derivation where forms of the shape /CVC-C-/ (e.g. /bhōj-tum/) occur that a different sort of derivation is necessitated, for, as the examples show, only a few forms have undergone further consonant simplification, preserving the long full-grade vowel, and most of these forms have alternates with short vowels and two following consonants. In like manner, the majority of roots of the underlying shape CVC- (→full-grade CVC-) do not undergo any consonant simplification at all, as they are of the same shape at the beginning of the derivation that roots of the shape CVCC- are at an intermediate stage (e.g. /phōs-tabba/ <phōs-; /bhōñj-tum/→/bhōj-tum/ <bhōñj-).

It appears, then, that there is a process of root-final consonant simplification which operates on roots which have become too 'heavy' as a result of full-grade formation. For causatives, this is, of course, the only consonant simplification which could apply, since the causative suffix is a vowel. In the full-grade categories with consonant-initial suffixes, however, the question still remains as to why the preservation of the long full-grade vowel does not prevail. In other words, why is this full-grade marker kept only up to a point, after which it is more frequently the case that this vowel is shortened and the consonant cluster retained? A possible answer to this question can be found by examining basic word structure.

Although there is evidence that simplification of overly heavy roots

takes place in favor of preserving the long full-grade root vowel, there nevertheless seem to be some restrictions on consonant simplification also. Combining the evidence from the causatives with that from the other full-grade categories, the facts seem to be the following: If the two consonants which follow the full-grade vowel are followed by a morpheme boundary (i.e. the two consonants are part of the root), the consonants always simplify. If, on the other hand, the two consonants are separated by a morpheme boundary (i.e. the first consonant is part of the root, the second being part of the suffix), the usual manner of simplification is vowel shortening: caus. /kōpp-e-/→\*kōp-e-, but: infin. /chēnd-tum/→/chēd-tum/→chēt̃tum; grd. /phōs-tabba/→phōt̃thabba. As the examples in 5.1. show, in the cases where the consonants separated by a morpheme boundary have been simplified, alternate forms usually exist with a short root vowel and double consonants. An explanation for this situation may lie along the following lines: In a structure containing a long vowel followed by two consonants (and which must therefore be simplified), the vowel can be preserved by simplifying the consonants. If these consonants are followed by a morpheme boundary (i.e. are root-final) consonant simplification can occur and the basic (or skeletal) structure of the word will still be preserved. Thus, in causatives, which have a vowel suffix (-e-), after consonant simplification, root and suffix structure are clearly definable: e.g. kōpe- (=CVC-e-).

[root][suffix]

Likewise, in forms with consonant-initial suffixes, the 'basic' morphemic structure remains after root-final consonant simplification takes place: (full-grade) /chēnd-tum/→/chēd-tum/→/chēt̃tum/ (= CVC-tum)---even though [root][suffix]

consonant assimilation may obscure the exact nature of the consonants. If, on the other hand, the long vowel is followed by two consonants which are separated by a morpheme boundary, consonant simplification destroys the 'basic' structure of the word, in that there is no longer a clear division between a root and the suffix: e.g. /CVC-tum/→CVCum. Recall that the latter types of structures arise in two different ways: They can be an intermediate step in the derivation of forms from roots which

end in two consonants, as in the example given immediately above, after root-final consonant simplification has occurred; they can result from the combination of a (full-grade) root in a single final consonant with one of the consonant-initial suffixes: /CVC-tum/ (/phōs-tabba/). (Thus, the fact that there is a point in the derivation where forms from roots of both underlying shapes (i.e. CVC- and CVCC-) have the same structure explains why we find forms with identical surface shapes from underlying roots of different shapes).

It appears, then, that at the point in the derivation when a shape /CVC-C-/ exists, phonological rules (or constraints) take precedence over the morphological processes. In other words, preservation of the full-grade root vowel is less important at this point than preservation of the basic morphemic structure of the word.

The above facts lead to the conclusion that vowel shortening is the regular means of simplification of overly heavy structures when a morpheme boundary separates the two consonants which follow the long vowel. This vowel shortening process, however, still has to compete with the tendency to preserve the marker of these categories--the long full-grade vowel. This explains why we find a few forms in which the latter appears, alternately, at least. If the attested data represent the real situation, however, the forms with a long vowel and a single consonant can probably be considered as somewhat exceptional. Perhaps the second consonant simplification rule (that which applies to /chētum/ to give chetum) can be considered a 'clean-up' rule, applying at a low level as a sort of last effort to produce a phonetically permissible form, when the long full-grade vowel is allowed to remain.

6.1. Having discussed the derivation of (inherited) full-grade formations, in particular in light of the reinterpretation in (Pre-) Pali of the lengthening of a as part of the morphological full-grade formation process, we should now turn to consider the effects which the phonological constraint on consonant simplification had on these full-grade categories. The shortening of the full-grade root vowels changed the character of the vowels e and o in a quite different manner from the way

in which it changed the vowel a. Since e and o differ in quality as well as in quantity from their 0-grade equivalents i and u, vowel shortening does not destroy their identity, for their quality allows them to remain recognizable as full-grade vowels. The vowel a, on the other hand, bears no trace of having undergone full-grade formation once it has been shortened, since this latter process changed its quantity only. The full-grade forms with a root vocalism are thus opaque on the surface with respect to (part of) the morphological full-grade formation process and a surface discrepancy is created between the forms with a and those with e and o.

6.2. Returning now to a consideration of the problem stated at the beginning of this paper, namely, the asymmetry which exists with regard to the spread of the use of the unaltered underlying root and i-insertion, we might attribute the extensive loss of the full-grade process to the opacity which has come to exist in forms with a vocalism. However, lengthening of a seems to be well-motivated as part of the full-grade formation process at this stage of the language, and the 'reason' for the opacity is clear, especially since e and o also undergo shortening. Thus, it could plausibly be argued that this simple surface opacity which is very transparently motivated by a phonological constraint would not be sufficient to cause an entire process to be lost. Consideration of certain other facts of the language, however, reveals that vowel shortening created a much more serious degree of opacity than that which has been noted thus far.

It will be recalled that, in Pali, when no morphological ablaut rule applies to a root, i-insertion frequently occurs between the root and the suffix (e.g. modita < mod-), while if an ablaut process does alter the root shape, i-insertion does not take place: rather, the root-final and suffix-initial consonants assimilate (e.g. bhottup < bhuñj-). However, the regularity with which i-insertion applies to the underlying root plus a consonant-initial suffix is by no means as great as the regularity with which consonant assimilation (rather than i-insertion) applies when roots have been altered by one of the ablaut processes. Thus,



while there are only a few exceptional forms to which morphological root alteration and i-insertion have applied,<sup>19</sup> there are a number of forms which consist of the underlying root to which consonant assimilation rather than i-insertion has applied. Quite a few of these latter types occur in Ø-grade categories from roots of the shape /CaC-/ (where C is any obstruent, e.g. kas-). Ø-grade formation cannot apply to roots of this shape, when the root occurs in word-initial position, since such application would leave two contiguous obstruents (kas-> ks-). Such a cluster is not permitted in Sanskrit or in Pali. Thus, a form such as kaṭṭha, ppl. of kas- is made up of the underlying root and the suffix -ta. Various other instances of consonant assimilation applying to forms containing the underlying root are found in cases where the root vowel of an inherited form without i-insertion is identical to that of the Pali underlying root: e.g. infin. Pa. eṭṭum < es- (Skt. eṣṭum): ppl. Pa. piṭṭha < pis- (Skt. piṣṭa). There are even a few forms which have been created within Pali itself which consist of the underlying root and which have undergone consonant assimilation rather than i-insertion:<sup>20</sup> e.g. dissa-, future of dis-; tutṭhabba, future pol. of tuss-; missa-, future of min-.<sup>21</sup>

6.3. In light of the types of formations just discussed, it seems very doubtful that all of the full-grade formations with the surface root vowel a would have been derived by morphological vowel lengthening and subsequent shortening. Rather, it seems likely that some such forms, at least some of those from roots in a single final consonant,<sup>22</sup> would be felt to consist of the unaltered underlying root. The problem is that there is no concrete means for determining how the forms with the root vowel a should be interpreted. Perhaps the most logical assumption to make about such a situation is that confusion would exist in the minds of speakers as to how to interpret forms of the type just described and that there would not necessarily be uniformity among speakers in the manner of deriving them. Thus, the vowel shortening which takes place in full-grade formations with consonant-initial suffixes not only produces the surface opacity which has already been discussed, but it also creates a situation in which it is impossible to determine (from the surface



forms) which of two derivations a particular form has undergone. That is, we have opacity with respect to the derivational process which the forms have undergone as well as opacity with respect to a particular rule. Thus, the surface opacity (brought about by the desire to preserve morpheme structure) combined with the ambiguity of derivation which necessarily accompanies it, and these two factors further combined with the already growing tendency in the language to simplify verbal derivation and preserve underlying structure (by the loss of root ablaut and vowel insertion), would seem to provide a reasonable amount of motivation for the loss of full-grade formation in the categories with consonant-initial suffixes.

6.4. Upon first consideration, it might seem unreasonable to suppose that the entire morphological process was lost because of opacity with respect to only part of it. That is, since only forms with the vocalism a were opaque, we might expect that only these forms would be derived by the new process, allowing the old process to remain partially productive and to be lost gradually in forms with e/o root vocalism. This would, however, have created even more asymmetry in the system as a whole than that which was caused by the entire loss of full-grade formation in categories with consonant-initial suffixes. For, full-grade formation would be operative in terms of e and o vocalism in all of the categories, but in terms of e, o, and a in causatives. The loss of the full-grade formation process in categories with consonant-initial suffixes leaves it operative only in causatives, where it can continue to apply in the most general manner possible.

Whether or not the rule would have been lost if all of the above-discussed factors had not been present is, of course, impossible to answer. There seems to be a tendency, however, for languages not to tolerate ambiguity of (or competing) derivational processes.<sup>23</sup> Thus, it might be safe at this point to speculate that even if the newer derivational process had not been in existence, there would have been an attempt to ameliorate the situation by generalization in one direction or another.

7.1. It is interesting that if the analysis which has been given in this paper is correct, it is the addition of the lengthening of a

to the morphological full-grade formation process which caused the eventual loss of this entire morphological process (except in causatives), for if only e and o were analyzable as full-grade vowels, as in Sanskrit, none of the problems just outlined would exist. Thus, while the changes which made it possible to interpret the lengthening of a as part of the full-grade formation process in causatives would seem to represent a simplification (since root strengthening could then apply more generally, not only in causatives, but in the other full-grade categories as well), due to a competing process in the language (i.e. the constraint on the degree of consonant simplification), what seemed to be a simplification turns out to indirectly create a complication so great as to cause the loss of an entire type of formation.

8.1. Although this paper has, on the one hand, been very language specific, in seeking a solution to a problem in Pali, it is hoped that it has, on the other hand, made a contribution to an eventual understanding of the complex processes involved in the different sorts of rule loss.

#### FOOTNOTES

<sup>1</sup>Consonants assimilate in the following manner in Pali (given in decreasing power of resistance to assimilation): obstruents, sibilants, nasals, l, v, y, r. When two stop consonants of the same class meet, the first assimilates to the second: bd→dd; nm→mm, etc. Liquids and semi-vowels assimilate only in the order given above: e.g. lv→ll: ry→yy; yl→ll; rv→vv, etc. Several of the consonant assimilations need additional explanation. Dentals plus y change to geminate palatals: t(h)y→cc(h); d(h)y→jj(j); ny→ññ. s plus a stop consonant changes to a geminate aspirated stop: e.g. st→tth; sk→kkh.

<sup>2</sup>The changes which led to this restructuring, although interesting, are beyond the scope of the present paper.

<sup>3</sup>The ablaut system of Sanskrit can be characterized simply as follows:

Full-grade	Ø-grade
e /ai/	i
o /au/	u
ar	ṛ (syllabic <u>r</u> )
aṁ/n	a

Full-grade and 0-grade are the only root vocalisms relevant to the discussions in this paper.

<sup>4</sup>a is a thematic vowel. It is one of several Sanskrit present-tense suffixes and is the one which is used (nearly) exclusively in Pali. Other Sanskrit present-tense suffixes are given in this list of examples.

<sup>5</sup>The Sanskrit palatal, retroflex, and dental sibilants (ś, ṣ, ś respectively) have merged into the dental sibilant (s) in Pali.

<sup>6</sup>As may be apparent from the Sanskrit present stems, the final geminate consonants in some of these Pali roots are the result of the (historical) assimilation of Sanskrit root-final and present tense suffix-initial consonants: Skt. kup-ya- > Pa. kuppa-; Skt. pad-ya- > Pa. pajja-; Skt. lubbh-no- > Pa. lubbha- (-o- has been replaced by a by analogy to the many other present-tense forms with the thematic vowel a). Due to consonant assimilation, these present-tense suffixes are not recoverable in Pali. Thus, what was clearly segmentable in Sanskrit as a root plus a present-tense suffix has been reinterpreted in Pali simply as a root plus the thematic vowel a. It should be noted that when I refer to the present stem as the underlying root in Pali, I am, of course, excluding the thematic vowel a.

<sup>7</sup>In Sanskrit, i-insertion is a minor rule and applies both to non-ablauting verbal forms and to verbal forms which have undergone one of the ablaut processes. It does, however, apply the most regularly to verbal forms of non-ablauting roots. Such a manner of application is logical, for if the root has not undergone alteration by one of the ablaut processes, then i-insertion allows complete preservation of basic root structure, for no alteration of the root-final consonants can occur either: e.g. tarjita, ppl. of tarj-, with no root ablaut and with i-insertion, as opposed to trṣṭa, with 0-grade root shape and with the change of j to ṣ before t (t then assimilates to ṣ and becomes retroflexed). The situation which is in evidence in Pali is thus a natural development of that which exists in Sanskrit: In Pali, i-insertion always preserves basic structure, since it applies only to underlying root formations.

<sup>8</sup>The manner of dealing with the alternation of -jj(h) with -d(h) is irrelevant to the present discussion.

<sup>9</sup>The contracted diphthongs e and o are phonetically long.

<sup>10</sup>In some Sanskrit causatives, the a is short even though it occurs in an open syllable, the reason being that the syllable was originally closed by a consonantal segment which has disappeared by the time of historical Sanskrit: e.g. vam-aya-.

<sup>11</sup>Lengthening of a has to take place before the final consonants are simplified, since it is the long root vowel which necessitates the consonant simplification.

<sup>12</sup> There are no word-final consonants in Pali. The orthographic symbol m is called anusvara and indicates nasalization of the preceding vowel.

<sup>13</sup> Initial geminate clusters (resulting from assimilation of Sanskrit root-final consonant clusters) are not permitted in Pali and are always simplified.

<sup>14</sup> Failure to cite a Sanskrit form indicates that none exists (or at least is not attested in the literature) which corresponds exactly to the Pali form.

<sup>15</sup> In forms with e/o plus two consonants, the vowels have been shortened in accordance with the two-mora constraint.

<sup>16</sup> I have not listed any of the newer type of formations, consisting of the underlying root and the inserted vowel i, for the majority of forms in these categories are of this type and their formation is obvious, given the underlying root.

<sup>17</sup> Shortening the root vowel rather than simplifying the root-final geminates would, of course, be an alternate way of alleviating the overly heavy syllable.

<sup>18</sup> Already in the later stages of Sanskrit, i-insertion applies regularly to a root ending in two consonants followed by a consonant-initial suffix.

<sup>19</sup> These exceptional forms are participles. I have not cited or discussed them, as they are not of significant interest to this paper.

<sup>20</sup> In general, verbal forms which are Pali innovations consist of the underlying root and the inserted vowel i.

<sup>21</sup> These forms have undergone consonant simplification as well as assimilation (where relevant): /min-ssa-/ → missa-; /tuss-tabba/ → /tus-tabba/ → tutthabba; /dis-ssa-/ → dissa-.

<sup>22</sup> As stated previously, it would be unreasonable to suppose that full-grade forms with short a from CaCC- roots could be interpreted as being derived from the underlying root, for this would involve the exceptional failure to undergo i-insertion, and there is no reason to suppose that a speaker would impose an irregular derivation on a form if there exists another choice.

<sup>23</sup> Although, as stated at the beginning of this paper, detailed investigations of rule loss are in general lacking, some of the studies which have been reported on substantiate an hypothesis that opacity with regard to particular derivational processes tends not to be tolerated. This is illustrated in some detail in Miller (1970) (although somewhat indirectly

and with the use of different terminology) and in less detail in Kiparsky (1972) (again, somewhat indirectly).

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SOME ASPECTS OF  
UNDERLYING SYLLABLE STRUCTURE IN THAI:  
EVIDENCE FROM KHAMPHUAN--A THAI WORD GAME

by Aporn Surintramont

Word games are interesting to phonologists in general for the reason that they are a phenomenon of language which may reveal facts about the language and its speakers. The games may provide clues to the phonological rules operative in the language and thus may be helpful to phonologists in working with the language. To others, namely anthropologists, sociologists and psycholinguists, this kind of verbal play is meaningful for its deviation from common linguistic usage. This deviation sometimes expresses the characteristics of the society and its culture: it is a particular manner in which society, due to conventional regulations or cultural taboos, chooses to express its experience.

khamphuan, henceforth, KP, is a word game of the Thai<sup>1</sup> language which involves reversing the "final sounds" of two syllables. It is often regarded as a kind of pun. The word "pun" is used here to mean a play on words which makes use of the ambiguity or the homophonous quality of the words or sentences. kham "word" and phuan "reverse, switch" would seem to give one the idea of switching the words back and forth. But what actually happens in the game is rather the exchange of syllable finals between two words or two syllables. By "syllable final" we mean the entire syllable minus its initial consonant. This will include a vowel plus a possible final consonant, as well as tone.

This exchange of the finals creates "new" sounds and "new" meanings. KP is primarily associated with taboos or vulgar expressions, and secondly, it is used as a secret code among children. KP creations associated with taboos may be divided into two groups: classified and unclassified. Classified expressions are those which are listed in the grammatical texts of the Thai language used in high schools throughout the country. All of these forms are legitimate lexical items in Thai in their own right, but are to be avoided at all costs by "polite" speakers, since their KP forms are vulgar,

or obscene. For example, students are taught never to use the word hě̃n+khuan+dũaj "agree with" (albeit a seemingly innocuous word to a beginner in Thai) because, unfortunately, the KP form turns out to be hě̃n+khua+j+dũãn, which means "see the stubby penis."

Thai textbooks classify the expression tầag+dề̃d, "expose to sunlight" as unacceptable in "polite" discourse. Again, there is nothing inherent in its meaning which is vulgar or shocking about this expression. Rather it is the well known KP form which would raise eyebrows in certain circles: namely, tề̃d+dầ̃ag, which means, loosely translated, "sagging clitoris".

In Thai there is an elaborate special vocabulary used only for talking to royalty. Words and expressions with risqué KP counterparts are even mentioned in the "royal glossary", Rachaasab. Once again, loyal readers are strongly urged to replace these particular items with phonologically euphemistic synonyms. Actual examples from the Rachaasab are given below:

(001)

Expression to avoid	Gloss	KP form (happens to be vulgar)	
1. <u>phầ̃gbũ̃n</u>	"morning glory"	<u>phũ̃nbầ̃g</u>	"penis" (obsc.)
2. <u>tầ̃agdề̃d</u>	"expose to sunlight"	<u>tề̃ddầ̃ag</u>	"sagging clitoris"
3. <u>tũãn^g</u>	"bean sprout"	<u>t^gũãn</u>	"push back the foreskin"

The "unclassified" expressions mentioned earlier are what we have referred to as "puns". The expressions themselves are grammatical and have a literal reading, of course. But in order for these expressions to make sense in context, certain keywords in the sentence have to be switched using the KP principles. Consider the following examples:

(002)

- A. khraj phỏ̃m laãj "Whose hair is striped?"  
 B. kh^ taãj taam sabồ̃d "May I die"

These sentences may have to be "reversed" in order to make sense in the context in which they are used.

(003)

- A. khraj phầ̃aj lom "Who breaks wind?"  
 B. kh^ tồ̃d taam sabaãj "May I fart according to my will."

Now, (002-A) may be said of someone who has just "broken wind" and the meaning is clear. Only the dull-witted would ever respond to the literal meaning of the sentence.

A second kind of unclassified expression involves the addition of a nonsense syllable to a word or syllable so that the words or syllables can be reversed into KP. Examples of this type are given in (004).

(004)

<u>Gloss</u>	<u>Word</u>		<u>Nonsense syllable</u>	<u>Common expression</u>	<u>KP form understood</u>	<u>Gloss of KP form</u>
1. indian	khêeg	+	tîi	khêegtîi	khîitêeg	the "runs"
2. cake	khêeg	+	cîi	khêegcîi	khîicég	Chinese's shit
3. mountain	d j	+	mŷn	d j mŷn	dym j	pull s.o.'s pubic hair
4. king	khin	+	lfi	khinlfi	khîilin	monkey shit
5. porcupine	mên	+	s ŋs j	mêns ŋs j	m j s ŋsên	2 pubic hairs

Children sometimes play this kind of KP as a game, in which each child takes a turn asking the others to switch the words or phrase he thinks up. The winner is the one who can switch faster than the others.

Another observation about KP is that as a game played by children, KP serves as a "secret code" of peer groups. It could be considered to be analogous to "Pig Latin" in English. KP in this sense is not dependent upon any pun effects. For example, the KP utterance

(005)

kaaw khîn lécw năjpîi dannũu kan mǎj  
 KP KP KP

is to be understood as

(006)

kin khāaw lécw nīipaj duunān kan mǎj

(eat food already sneak off see movie together question particle)

"After eating, shall we sneak off to the movies together?"

In this paper, we wish to investigate some phonological aspects of Thai through this word game. We hope that the evidence from the game will help us to gain a clearer understanding of the nature of the underlying structure of Thai syllables going beyond what has been proposed in the literature. Our tentative proposals concerning the phonological constraints on syllable structure will involve aspects of tone in Thai. Additionally, we will try to postulate some phonological rules to account for the neutralization of tone as noted by Haas (1956).

Thai is an uninflected, monosyllabic, tonal language. The dialect used in the present paper is that of central Thai, the standard dialect of Thailand used as a means of instruction throughout the country. There are five underlying distinctive tones in Thai: mid, low, falling, high, and rising. The permissible tone shapes are governed by the shape of the syllables, the crucial point which will be discussed in detail later on. There are nine short vowels with nine corresponding long vowels and three diphthongs in Thai. The length contrast of a vowel will be represented as a sequence of VV which should be regarded as one whole unit. A brief description of the Thai phonetic system is given in Appendix A.

We are unable to determine independently on phonological grounds which of the words or syllables in the sentence string will be exchanged in the KP game. Semantics surely plays a crucial role in Thai puns as well as in English. But what we will try to show is how this exchange is done. Our study is based on data collected from a group of Thai students at the University of Illinois.

The principles in playing KP may be illustrated through the examples in (007). Notice how the exchange is done, with special attention to tone.

(007)

<u>Gloss</u>	<u>Word</u>	<u>KP<sub>1</sub></u>	<u>KP<sub>2</sub></u>
1. banana	klūaj+h <sub>~</sub> m	kl <sub>~</sub> m+hūaj	kl <sub>~</sub> m+hūaj
2. see movie	duu+nān	dān+nuu	dān+nuu
3. dance	tēn+ram	tām+rēn	tām+rēn

There seem to be two principles involved in exchanging the finals of the two syllables: the first is the exchange of the final (underlined portions) including the tone of the two syllables: e.g., kl<sub>~</sub>m+hūaj from klūaj+h<sub>~</sub>m. The second principle is the exchange of the segmental portion of the final, but not the tone: e.g., kl<sub>~</sub>m+hūaj from klūaj+h<sub>~</sub>m. Note that the tone sequence falling-rising is not affected. There is no obvious way of predicting which of the principles will be used, for they are used interchangeably in most cases. However, consider the data of (008).



(008)

<u>Gloss</u>	<u>Word</u>	<u>KP<sub>1</sub></u>	but not	<u>KP<sub>2</sub></u>
1. headache	puađ+hũa	pũa+hũađ		*pũa+hũađ
2. Friday	wan+sùg	wùg+san		*wug+sân
3. scorn	duu+thùug	dùug+thuu		*đuug+thũu
4. attend temple	paj+wáđ	páđ+waj		*pad+wấj
5. touch head	câb+hũa	cũa+hâb		*cua+hab
6. indian ghost	phĩi+khêeg	phêeg+khĩi		*phêeg+khĩi
7. gold flower	d` g+th ñ	d ñ+th` g		*d` ñ+th g

The KP forms of the words above have no alternant forms with unswitched tones -- we never find \*wug+sân as a KP<sub>2</sub> form of wan+sùg, or \*pũa+hũađ from puađ+hũa. In other words, the first principle is always chosen (i.e., KP<sub>1</sub>) -- tones are obligatorily shifted. This constraint, we will show below, is due to the distribution of tone in Thai syllables.

We will quote Haas (1956) who followed the traditional Thai grammarians<sup>2</sup> in giving the tone rules in relation to the types of syllables.

"There are two main types of syllables in Thai which must be distinguished in order to understand the rules for writing the tones. The terminology used by the Thai themselves is live syllables and dead syllables. Their characteristics are described below.

1. Live syllables comprise the following:

- a) All syllables ending in a long vowel or in a vowel cluster:

<u>kaa</u>	'crow'	<u>hũa</u>	'head'
<u>sĩi</u>	'color'	<u>sũa</u>	'mat'

- b) All syllables ending in a sonorant, either a semivowel (-j, -w), or a nasal, (-m, -n, -ŋ):

<u>faj</u>	'fire'	<u>náam</u>	'water'
<u>daaw</u>	'star'	<u>kên</u>	'expert'

## 2. Dead syllables comprise the following:

- a) All syllables ending in a short vowel.  
In most cases, these are pronounced as a short vowel plus glottal stop.

cā? 'will'      j'? 'a whole lot'

- b) All syllables ending in a stop, (-b, -d, -g):

sīb 'ten'      hīb 'box'

rāg 'love'      māg 'much'

The relationship with tone can be stated in this way: syllables of the shape CVV and CV(V)  $\begin{smallmatrix} N \\ G \end{smallmatrix}^3$  which are, by definition, live syllables, can have any of the five tones, namely, mid, low, falling, high, or rising. But syllables of the type CV(V)S<sup>3</sup> or CV- or CV? (i.e., dead syllables) are always restricted to one of three tones: low, high, or falling. There can be neither a mid tone nor a rising tone on dead syllables. However, while it is true that there is no rising tone on dead syllables<sup>4</sup>, it seems to be the case only in the central Thai dialect and not in many other dialects of Thai. For instance, the northern Thai dialect has many dead syllables with rising tone. Consider, for example:

## (009) Northern Thai dialect

kē? 'lamb; to carve'  
bō? 'to split (a log etc.)'  
cōg 'to pry into'

## (010) Northeastern Thai dialect:

hōg 'six'  
sīb 'ten'  
nāg 'heavy'

Nevertheless, the condition which states that there can be no mid tone on dead syllables seems to operate in a vast range of cases; some examples are the various dialects of Burmese (cf. Maran, 1971) and the two dialects mentioned earlier--the northern and northeastern dialects of Thai.

But owing to a phonological process which Haas calls "neutralization", mid tone is phonetically possible on certain types of dead syllables, i.e. of the shape CV?. We will consider this issue in detail later on.



(012) is a sketchy formulation of the Shifting Rule. "t" above the vowels stands for tone. (012-a) accounts for the  $KP_1$  forms of (011) where the entire finals of the two syllables exchange. (012-b) accounts for the  $KP_2$  alternates, i.e. when the finals except for the tones are exchanged. (012-b) is blocked if it will create a structure that will violate the condition on tone distribution, and, in effect, it makes (012-a) obligatory.

What had been proposed by Haas (1956) concerning neutralization is that there is in the language a process of neutralization which operates to drop syllable final glottal stops except at the end of the word. The tone of such a syllable then becomes mid. However, she did not attempt to formulate the rule for such a process. The environment where the process occurs is in "rapid" or rather "conversational" speech, in contrast with "slow" or "isolative" speech where the syllable maintains the glottal stop with the underlying tone. Compare the examples in (013) below. It should be noted also that in slow speech, each syllable of a mono- or poly-syllabic word is stressed,<sup>5</sup> whereas in conversational speech there is a tendency to place stress on the last syllable of the word. In our analysis, we will be taking the isolative style as the underlying representation and the conversational style as the phonetic representation.

(013)

<u>Gloss</u>	<u>Underlying Representation</u>	<u>Phonetic Representation</u>
1. soldier	/thá?.háan?	·tha.háan
2. road	/thā?.nōn/	tha.nōn
3. cigarette	/bū?.rīi/	bu.rīi
4. dust	/lā??.? η/	la.? η

(. indicates a syllable boundary)

Now, consider the KP forms in (014) below:

(014)

<u>Gloss</u>	<u>Word</u>	<u>Isolative Speech</u>	<u>KP form</u>
1. nose	camùug	cà?.mùug	cùugmà?
2. cigarette	burìi	bù?.rìi	bìirù?
3. road	thanõn	thà?.nõn	thõnnà?
4. tamarind	makhãam	má?.khãam	mãamkhá?
5. soldier	thahaan	thá?.hãan	thãanhá?

Note that what seems to be a common property of the first syllable of the lexical items given is that they are all short open syllables. By definition, they are dead syllables, but they violate the tonal restrictions, since they are all mid tone. As for the KP forms, the second syllables exhibit an unpredictable low or high tone; furthermore, all of them end with a glottal stop. This seems to be far more than just a coincidence. The corresponding isolative forms in (014) confirms our assumption that these phenomena are not merely a coincidence. Notice that in isolative forms in which each syllable is pronounced with full stress, the first syllable shows up with final glottal stop and either high or low tone, whereas in conversational speech the first syllable is unstressed, and the tone is neutralized to mid. Recall also that in the game of KP both syllables are stressed. Apparently, the players of KP utilize the slow speech form, which is the underlying representation, as a base in playing the game.

Given the principles of KP, one can simply assume that the glottal stop and the tone of the second syllable of the KP forms belong to the original first syllable. But is there any phonological basis to predict which tone will show up on the second syllable of the KP forms when the original first syllable is a neutralized mid tone? And is there any connection between the presence of a glottal stop and the high and low tone in the KP forms at all?



The presence of the glottal stop is open to two synchronic analyses: either it is inserted or underlying. Though we believe the glottal stop to be basic, we will first explore the possibility that it is inserted phonetically after an open, short syllable at the end of a word--a plausible phonetic rule.

Before continuing, we shall present some more examples that will facilitate our discussion concerning the distribution of the glottal stop in Thai.

(015)

<u>Gloss</u>	<u>Word</u>	<u>KP<sub>1</sub></u>	<u>KP<sub>2</sub></u>
1. food	?aahaan	?aanhaa	?aanhãa
2. jealous	?îdchãa	?ãachîd	*?ãachîd
3. lotus	?ubon	?onbû?	*?ônbu?
4. quarrel	thal'?	th'?'lã?	th'?'lã?
5. especially	chaph'?	ch'?'phã?	ch'?'phã?
6. sp. of eggplant	ma?y̥g	m̥y̥g?á?	m̥y̥g?ã?

In (015-2 and 3) above, because a rising tone and mid tone cannot occur on dead syllables, the KP<sub>2</sub> forms must be blocked. In (015-4), the rules responsible for the production of KP<sub>1</sub> and KP<sub>2</sub> forms generate identical outputs, because the underlying tones are identical--in this case, both are high.

Syllables in Thai are never vowel-initial. A glottal stop occurs before either long or short vowels in word-initial position. (See examples 015-1, 2, 3). In final position, a glottal stop may occur only after short vowels, (cf., thal'?, chaph'?), and not after long vowels (cf., ?îdchãa). In (013-6), which is pronounced /ma.?'y̥g/ not \*/ma.?'y̥g/, there is no glottal stop after the short vowel /a/ in the syllable /ma./, but it does show up initially in the second syllable /.'y̥g/.

In the preceding paragraph we have just seen the distribution of glottal stop in the lexical items. As for the KP forms, the distribution of glottal stop closely resembles that of the corresponding lexical items, except for a few places where it occurs at the end of the KP word, along with a seemingly unpredictable tone. Furthermore, the glottal stops in

(015-4 and 5) show up at the end of the first syllable (of KP forms) which is short. Compare the example of our previous discussion, /ma.ʔŋg/ and /thʔ.láʔ/, for instance, the latter being a KP form. Note that it is only in KP forms that one can find a non-final short syllable ending with a glottal stop.

Earlier we said that the presence of the glottal stop in Thai is open to two analyses: either it is inserted or underlying. If we accept the analysis which claims that the glottal stop in Thai is inserted at the end of an open short syllable (in addition to the syllable initial position), then we will have to state a condition on the insertion rule: the insertion rule may not apply to a non-final short open syllable, except in isolative style. This condition is needed in order to prevent insertion of glottal stop in forms such as thalʔ (\*thaʔlʔ). But the rule will have to be reformulated in order to be allowed to apply in the case of KP forms to insert a glottal stop at the end of a syllable, (vid., KP forms of 015-4,5), whether or not the syllable is word final. It is obvious, then, that the insertion rule would be a paradox in itself.

Of course, one could still maintain that a glottal stop is inserted word initially in Thai, but this problem is of little importance to the matter at hand. We will limit ourselves to only the problem of a glottal stop in final position.

There may be some other analysis which might argue that the glottal stop is inserted, not underlying in Thai. But such an analysis would miss one significant fact about Thai concerning tones. This will be discussed shortly. We will demonstrate that the glottal stop is not inserted but rather underlying in Thai. Supporting our claim is some evidence from the constraints on the tonal shape of the syllable in the underlying representation.

In Thai, the tonal shape of the syllable is governed by the final consonant. The type of short, dead syllables ending with either /-b/, /-d/, or /-g/ may only have a low, high or falling tone. In this respect, the short dead syllable ending with glottal stop behaves similarly to the other stop-final consonants. That is, the glottal stop governs or triggers the same array of tones as other stops do. Compare the following examples:

(016)

- |         |             |         |                       |
|---------|-------------|---------|-----------------------|
| 1. khâd | "polish"    | 5. câ?  | "will"                |
| 2. khâd | "to select" | 6. khế? | "to pry into"         |
| 3. lág  | "to steal"  | 7. lá?  | "to desert"           |
| 4. tûb  | "thud"      | 8. khâ? | "fem. final particle" |

There are two characteristic differences between glotal stop and other stop consonants. First, there are no long dead syllables ending with a glottal stop, while there are great number of long dead syllables ending with other stop-final consonants. For example:

(017)

- |          |           |         |                  |
|----------|-----------|---------|------------------|
| 1. khâad | "torn"    | 3. wâad | "to paint, draw" |
| 2. rûub  | "picture" | 4. nîib | "to squeeze"     |

Secondly, they differ in the quality of being deletable: a glottal stop is deleted from neutralized syllables in the process of neutralization, but no stop-final consonants may be deleted under any circumstances. The deletion of a glottal final induces another process--the changing of the tone on the syllable to mid tone. For those syllables that have undergone the deletion rule, both high and low tones will become mid, whereas the tones on syllables ending with stop consonants never get changed, since the final consonants which govern the tones are never deleted.

It is its quality of being able to govern the tones of the syllables that leads us to propose that the glottal stop is underlying. Since tone is phonemic in Thai, the feature [tone] should be in the underlying representation. It follows that the segment governing tone (in this case, the glottal stop) is also needed in the underlying representation to state constraints on the tonal shape.

If we accept the analysis which says that glottal stop is underlying for the reason that it governs or triggers the same array of tones as other stop finals do, then we can account for the presence of glottal stop at the end of the KP forms in (014) as being originally underlying in the first syllable of the basic lexical items. The players of KP apparently make use of a deeper representation of the syllable than the neutralized

mid tone syllable of the surface form when switching finals; we have referred to this level elsewhere as the underlying representation. What is implied here is that the seemingly "unpredictable" low and high tones on the second syllable of the KP forms in (014) are also underlying. In addition, we are able to answer the question concerning the relationship between the tone and glottal stop. That is, the underlying low or high tone of a short syllable ending with an underlying glottal stop is neutralized to mid tone upon deletion of the glottal stop.

There seems to be more than one way that one could formulate the rules to account for the deletion of glottal stop and the neutralization of tones. The following are two possible sets of rules.

(018)

Reduction Rule:

	V	?	C
-str			
-long		-----	1 0 3
			[mid]
	1	2	3

(019)

a) Glottal Stop    ?    ---- Ø / V \_\_\_\_ C  
    Deletion  
                        [-str]

b) Tone Neutralization      V      ----) [mid]    /    -str .  
                                         [-long]

```
str = stress
```

mid = mid tone

. = syllable boundary

The Reduction Rule, (018), is a transformational rule which operates directly to delete a non-final glottal stop after a short, unstressed vowel. The vowel itself simultaneously becomes mid tone.

This Reduction Rule would derive forms such as thahāān from an underlying structure of the shape /thāʔ.hāān/. prawādtisāad from the underlying form /prāʔ.wād.tīʔsāad/ is an example of a word which has undergone two applications of the Reduction Rule, in the first and the third syllable. There is an interesting systematic class of counter-examples to multiple applications of the Reduction Rule, of which ?anūmād

is but one example. The underlying representation of ?ánúmád is /?â?.nú?.mád/, with two adjacent syllables (the first and the second) meeting the environment for the Reduction Rule. Note that the pronunciation we have indicated is ?ánúmád, with nú retaining its high tone. However, two applications of the Reduction Rule would produce ?anumád, with nu neutralized to mid tone. Both pronunciations may be found in Thai, where ?ánúmád is usually used in a more formal style of speech, while ?anumád is less formal.

In order to account for the former style of speech in which nú is unaffected, we will propose a dialectal (or perhaps merely stylistic) constraint on the application of the Reduction Rule: reduction may not create a sequence of two adjacent derived mid tones. That is, while this rule may produce two mid tones in a form such as prawâdtisâad /prâ?.wâd.tî?.sâad/, it may do so only when the affected syllables are not in juxtaposition. It can be demonstrated that lengthy sequences of mid tones are not prohibited generally as a superficial phonetic constraint in Thai. Consider the word thammadaa "common" which may be derived from /tham.mâ?daa/ by a single application of the Reduction Rule. Though the output contains three adjacent mid tones, only one is derived. The constraint that two derived mid tones may not occur in adjacent syllables has not been violated. Remember, though, that this constraint is often done away with in an informal style of speech, while it is preserved in a formal style such as that of a radio announcer.

The constraint discussed above may likewise be explained in terms of the blocking of the application of the Reduction Rule if it tries to apply in a syllable which is adjacent to a syllable in which it has just applied.

In (020) below, more examples are given illustrating multiple application of the Reduction Rule (018).



(020)	<u>Gloss</u>	<u>Underlying Representation</u>	<u>After Rule (018)</u>
1.	to allow	/ʔāʔ.núʔ.jāad/	a) ʔanujāad b) ʔanújāad
2.	humanity	/máʔ.núd.sāʔ.jáʔ.tham/	a) manúdsajatham b) manúdsajátham
3.	be kind	/kàʔ.rúʔ.naa/	a) karunaa b) karúnaa

We have not yet discussed the directionality of the applications of rule (018). The form /kàʔ.rúʔ.naa/ (020-3) which underlies either karunaa or karúnaa is typical of polysyllabic words in which there is a sequence of two syllables to which Reduction could apply. In karunaa, the informal style, the rule has applied to both syllables. In karúnaa, Reduction has changed only the first syllable to mid tone. (In all cases, the (a) form is informal, while the (b) form is formal, with the constraint applying.) Reduction may, then, apply in both syllables, or just in the first syllable alone, but it may not pass up the first syllable and apply only in the second--cf. the ungrammaticality of \*kàrunaa. We must somehow capture this fact that the application of rule (018) is not an entirely random phenomenon. We will suggest that Reduction be constrained to apply first to the furthest syllable from stress--or, in other words, to the initial syllable of the word, since words having stress other than final are extremely rare in Thai. After applying to the first syllable, Reduction then attempts to change the next syllable to the right--and is blocked in the case of formal speech (020-b forms), but not in informal speech.

In bi-syllabic words, the Reduction Rule always neutralizes the first syllable to mid tone if it neutralizes a tone at all. So it seems natural to us that a hypothesis such as the one mentioned above, which effectively relates the directionality of tone neutralization to the first syllable, and, subsequently, to a left-to-right application of the rule, is basically a sound claim.

Basically speaking, Rule (018) and its associated constraints are attractive, for they can account for most of the data. Nevertheless, there is one serious objection to this analysis. (018) fails to account for the fact that the neutralized mid tone short vowels are the result of the deletion of a glottal stop in a particular environment, i.e. non-final, unstressed position. Note that a syllable of the shape CVS does not undergo neutralization even though it is unstressed, simply because final stops never get deleted. The tone neutralization process is clearly a consequence, in one way or another, of the loss of the glottal stop at the end of the syllable. This, in turn, would argue for an analysis like that of (019). It is possible to think of rule (019) as a more general formulation of the Reduction Rule. In (019), we have shown two general phonological rules: Glottal Stop Deletion (019-a) and Tone Neutralization (019-b), ordered in this way. The relationship between the two rules is a feeding one: the first applies to the input to delete a glottal stop after an unstressed short vowel. In so doing, the rule creates the environment for Tone Neutralization. The latter rule applies to an unstressed open syllable to yield the derived mid tone. And since, in Thai there are no underlying short open syllables, i.e. a structure with the shape of /CV/, the only vowels possibly affected by Tone Neutralization would be those which are found in the environment of Glottal Stop Deletion. That is, Tone Neutralization may affect only short vowels which were followed by a glottal stop prior to the application of rule (019-a), Glottal Stop Deletion.

An analysis that makes use of rule (019) will correctly derive forms such as thahaan from underlying /tháʔ.hān/; with two applications, we can derive prawādtisāad from /prāʔ.wād.tī.sāad/, as rule (018) does. Rule (019) will also need a dialectal or stylistic constraint in order to derive ʔanum from /ʔāʔ.núʔ.mád/ just the same as rule (018) does. But what makes rule (019) more preferable than (018) is the fact that it captures a generalization about the language, i.e. that there can be no mid tone on dead syllables in the underlying representation and that a short syllable with mid tone is derived subsequently upon the deletion of the glottal stop. In other words, rule (019) says that there is some connection between the two processes of Glottal Stop Deletion and Tone Neutralization, and that they are not two separate processes which, accidentally, may be collapsed into one transformational rule as in (018).

There is still another rule in the language which is relevant to our discussion: Vowel Shortening. Shortening applies in the conversational or rapid style speech in an unstressed syllable with an underlying long vowel. This rule converts a structure with the shape of CVV(C) into CV(C) without affecting the tone. In (021), we have listed examples of compounds in which the first elements are mostly bound morphemes. Note especially the phonetic representations of (021-5 and 6) where the vowels are short, but the tones remain unchanged.

(021)

<u>Gloss</u>	<u>Underlying Representation</u>	<u>After Rule (023)</u>
1. left side	/khâan+sâaj/	khânsâaj
2. right side	/thaan+khwāa/	thankhwāa
3. tea	/náam+chaa/	námchaa
4. sugar	/náam+taan/	námtaan
5. yellow robe	/phāa+lŷan/	phâlŷan
6. man	/phūu+chaaaj/	phūchaaaj

The underlying representations of the examples in (021) are actually equivalent to the isolative style of speech in which each syllable or word is equally stressed. The corresponding KP forms of (021) are given below in (022). Notice that, just like in (014), the KP forms exhibit the seemingly "unpredictable" long vowels in the second syllable, which supposedly corresponds to the first syllable of the lexical items.

(022)

<u>Gloss</u>	<u>Word</u>	<u>KP<sub>1</sub></u>	<u>KP<sub>2</sub></u>
1. left side	khânsâaj	khâajsâan	khâajsâan
2. right side	thankhwāa	thāakhwaan	thaakhwāan
3. tea	námchaa	naachāam	nāachaam
4. sugar	námtaan	naantāam	nāantaam
5. yellow robe	phâlŷan	phŷanlāa	phŷanlāa
6. man	phūchaaaj	phaajchūu	phāajchuu

Again, the players of KP appear to utilize the isolative style or, in other words, the underlying representation of the syllables in switching the finals rather than the phonetic representations which have undergone the

vowel shortening rule, because the first vowel, which is short in the unstressed first syllable of the Thai word, is long in the KP form. A general form of Vowel Shortening is given in (023).

(023)

Vowel Shortening

V ----- [-long]

[-str]

The Vowel Shortening Rule is responsible for deriving the phonetic representations in (021) above. The rule shortens the long vowels in the first element. There is no change in the second element.

To facilitate our discussion concerning the behavior of tones in structures with the shape CV-, we will repeat some crucial examples here and offer some new data.

(024)

<u>Gloss</u>	<u>U. Rep.</u>	<u>After rule (023)</u>
1. yellow robe	/phâa+lŷan/	phâlŷan
2. man	/phûu+chaaŷ/	phûchaaŷ
3. dinner	/mŷy+jen/	mŷjen
4. forest	/pâa+mâaŷ/	pâmâaŷ

Looking just at the surface representation of the output from the Vowel Shortening rule, one notes that the first elements of the words above are exactly in the right environment for Tone Neutralization to apply, since the vowels resulting from Vowel Shortening are short, unstressed, and are at the end of the syllable. However, Tone Neutralization does not apply to the examples of (024). We have from underlying /mŷy+jen/ the form mŷjen instead of \*myjen which would be an expected result from the application of the rule of Tone Neutralization.

Recall that the reasons for forms such as ?anûmâd in which -nú- retains its high tone is attributed to the stylistic constraint that blocks two derived mid tones in a row. This is not the reason for keeping the original tones in the forms of (024), however. Rather, this retention of underlying tone must be considered to be a point where derivational history is relevant to the operation of the phonological rules.



Given Tone Neutralization as it is formulated now, (019-b), there are, theoretically speaking, three possible types of forms which may undergo the rule: (a) the underlying shape /CV./; (b) CV- which results from Glottal Stop Deletion; or (c) CV- resulting from the Vowel Shortening Rule. According to our analysis, there is no structure of the shape /CV/ in the underlying structure of Thai. This fact will do away with the first possibility, (a). Since only the structures from source (b) undergo Tone Neutralization, and not the structures from source (c), the rule of Tone Neutralization has to be sensitive to the derivational history of the forms that will undergo the rule.

Present generative phonology does permit one to make a distinction between identical structures having different derivational origins--namely, by resorting to rule ordering. In our case, in order to prevent the output of Vowel Shortening from undergoing Tone Neutralization, we have to order the latter before the former rule. Rule ordering in this case then distinguishes structures derived by Vowel Shortening from other identical structures derived by Glottal Stop Deletion.

A more direct derivational history was discussed by Lakoff (1970) in terms of Global Conditions. That is, in order to determine whether or not the input structure satisfies the structural description of a phonological rule, the input itself and its previous stages in the derivation must be checked. Roughly speaking, Tone Neutralization may have the same formulation as in (019-b), but with an additional constraint: the vowel undergoing Tone Neutralization must be the one that has arisen through the application of Glottal Stop Deletion. Actually, the constraint might be simply that the vowel undergoing the rule must be underlyingly a short vowel.

We have shown through the game of KP that the KP forms help to distinguish the underlying long vowels from the underlying short ones in an unstressed syllable, since in KP the underlying length would show up in the former case, but not in the latter, where the short vowel is basic. KP would then give support to a phonological analysis making the relevant long/short contrast.

Furthermore, the game of KP enables us to gain some insight into the underlying structure of syllables in Thai and makes it possible for us to determine the nature of the process of Tone Neutralization in Thai.



## APPENDIX A

Thai Phonetic System

The phonetic system used in this paper is based on that of Haas (1964) with no adaptations. One may feel, though, that it is phonetically unrealistic to represent the stop finals as /-b/, /-d/, and /-g/. for final stops are unreleased in Thai. But we are in agreement with Gedney (1967) who notes that this creates no ambiguity, since there is only the single set, without contrast. There is an advantage in providing unambiguous transcriptions of the sound combinations occurring at the syllable boundary, since one combination br or gl, for instance, can only mean syllable-final /b/ or /g/ followed by a syllable-initial /r/ or /l/. whereas pr or kl could also indicate a syllable initial cluster.

Consonants

		<u>Bilabial</u>	<u>Dental</u>	<u>Palatal</u>	<u>Velar</u>	<u>Glottal</u>
Stops:	Voiced-Unasp.	/b/	/d/		/g/	
	Voiceless-Unasp.	/p/	/t/	/c/	/k/	/ʔ/
	Voiceless-Asp.	/ph/	/th/	/ch/	/kh/	
Spirants:	Voiceless-Unasp.	/f/	/s/			/h/
Sonorants:	Voiced Glides	/w/				
	Voiced Nasals	/m/	/n/		/ŋ/	
	Voiced Laterals		/l/			
	Voiced Trill or Retroflex		/r/			

Vowels

	<u>Front</u> (Unround)	<u>Central</u>	<u>Back</u> (Round)
<u>High</u>	/i/, /ii/, /ia/	/y/, /yy/, /ya/	/u/, /uu/, /ua/
<u>Mid</u>	/e/, /ee/	/ /, / /	/o/, /oo/
<u>Low</u>	/ɛ/, /ɛɛ/	/a/, /aa/	/ /, / /

Consonant Clusters(Initial Only)

	1 <sup>st</sup> consonant					
	p	t	k	ph	th	kh
l	x	-	x	x	-	-
r	x	x	x	x	*	x
w	-	-	x	-	-	x

x = possible cluster

\* = rare cluster

- = impossible cluster

Tone Markers

Mid - unmarked

Low - V

Falling -  $\hat{V}$ High -  $\acute{V}$ Rising -  $\check{V}$ Notes

1. cf. Mary Haas, "Thai Word Games", published in Language in Culture and Society, ed. by Dell Hymes. She discusses other word games that children in Thailand play in addition to khamphuan.
2. The justification or explanation for the rules governing the two types of syllables was not given by either Haas or the traditional Thai grammarians.
3. C = consonants; V = vowels; N = nasals; G = glides; S = stops.
4. Haas gives one example of rising tone on a short syllable, că?--a 'clipped' form of cāa, final particle for intimates. The word was found in a dictionary but it never occurs in the actual dialect of central Thai.
5. In general, the Thai stress rule is quite simple with most polysyllabic words having stress on the final syllable. There are only a few exceptions to this rule, and these cases, such as phīchai "conquer", with initial stress, may be a fertile ground for the historical linguist. Such words seem to be true counterexamples to the stress rule, rather than systematic exceptions.

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THE IDENTITY CONSTRAINT: AN EXPLANATION  
OF THE IRREGULAR BEHAVIOR OF SOME  
EXCEPTIONAL REDUPLICATED FORMS

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All too often, linguists are content to find any analysis of a language which seems to work, although that analysis may merely provide a description of the processes and their exceptions. A preferable analysis, however, would be one which explained the causes of exceptionality, perhaps by pointing to a universal principle. Often, because of the diverse manners in which exceptional forms may be handled, generalizations about the behavior of exceptional forms are overlooked. By considering reduplicated forms in several languages, it is possible to arrive at a generalization concerning their frequently irregular behavior with respect to phonological rules, not by looking at the descriptions of these forms in phonological terms, but by considering them in terms of the morphological function which is served by reduplication.

It is a common occurrence that reduplicated forms are exceptional with respect to phonological processes in a particular language. If each language is looked at separately, a pattern for this irregular behavior cannot be found. When many languages are considered, the exceptional reduplicated forms appear to fall into two groups, based on their interaction with phonological rules. In one group, a phonological rule fails to apply to the reduplicated forms, even though its structural description appears to be met. In the other group, a phonological rule appears to apply when its structural description is not met, a situation which I will refer to as overapplication of a rule. I will use data from several languages to illustrate these two groups.

A. A Rule fails to apply in the "Right" Environment

Madurese

Akan

Luisefño

## B. A Rule applies in the "Wrong" Environment

Tagalog

Dakota

Squamish

In Madurese, a general rule of Regressive Nasal Assimilation assimilates a preceding nasal to a following stop.<sup>1</sup>

/pan-bagi-an/	pam-bagi-an	'distribution'
/pan-dara-an/	pan-dara-an	'egg-laying'
/pan-zhaig/	pañ-zhaig	'tailor'
/pan-ghabaj-an/	pañ-ghabaj-an	'work'

In reduplicated forms, this general rule fails to apply.

/kun/	'order'	kunkun	*kunkun
/ban/	'wing'	banban	*bamban
/bin/	b-ar-in-bin	'stand on end'	*b-ar-im-bin
/dan/	d-al-an-dan	'tall and thin'	*d-al-an-dan
/təm/	t-ar-ən-təm	'peaceful'	*t-ar-ən-təm

The forms generated by reduplication "contain consonant clusters, consonant plus vowel clusters, nasalized vowels, and syllabic divisions which run completely contrary to what occurs elsewhere in Madurese" (Stevens, 1968:35). To handle these forms, Stevens postulates a plus juncture to block the rules which would eliminate these unusual combinations. "Plus juncture is thus the juncture occurring within words across which none of the phonology rules are effective. This is true of CVCCVC where the medial CC is  $C_n C_s$ , e.g. ban ban; the plus juncture has been assigned to all roots of this shape, i.e. to all reduplicated monosyllables" (Stevens, 1968:96 fn.5). If only the reduplicated forms have this boundary, then only the reduplicated forms will fail to undergo Regressive Nasal Assimilation and other phonological rules. Thus junctures provide one method for describing the exceptional behavior of these forms.

In all dialects of Akan,<sup>2</sup> the back consonants /k/, /g/, /w/, /h/, and /ŋw/ are palatalized in syllable-initial position before non-low front vowels.



kye	'divide'	/kɛ/	[tɕɛ]
gye	'receive'	/ge/	[dʒe]
we	'nibble'	/wɪ/	[ɸɪ]
hye	'border'	/hɪ/	[ɕɪ]

One major exception to this rule is that palatalization does not apply if the following syllable in the same morpheme begins with /t/ or /s/.

/kɛtɛ/	'mat'	[kɛtɛ]	*[tɕɛtɛ]
/kɛsɪ/	'big'	[kɛsɪ]	*[tɕɛsɪ]

Another major exception is reduplicated forms. The reduplication rule copies  $C_1$ , and possibly  $C_2$ , and uses a high fixed vowel.

si	[siʔ]	sisi	[sisiʔ]	'stand'
fe	[fɪʔ]	fefe	[fɪfɪʔ]	'vomit'
se	[sɛʔ]	sise	[siseʔ]	'say'
sa	[saʔ]	sesa	[sɪsaʔ]	'cure'
bu	[buʔ]	bubu	[bubuʔ]	'bend'
so	[sUʔ]	soso	[sUsUʔ]	'carry on the head'

If the underlying form of the unreduplicated word has a vowel which triggers palatalization (non-low, front), then palatalization applies to the reduplicated word. If, however, the vowel of the unreduplicated form is low or back, palatalization is blocked, even to the consonant preceding the high, fixed vowel.

gya	/ə/	[dʒəʔ]	gyigya	[dʒɪdʒəʔ]	'accompany'
twa	/kwə/	[tɕwəʔ]	twitwa	[tɕwɪtɕwəʔ]	'cut'
kye	/kɛ/	[tɕɛ]	kyekye	[tɕɪtɕɛʔ]	'divide'
hye	/hɪ/	[ɕɪ]	hyehye	[ɕɪɕɪʔ]	'burn'

Ak-Fa	haw	/haw/	[hawʔ]	hehaw	[hɪhawʔ]	'trouble'
As-Fa	ha	/ha/	[haʔ]	heha	[hɪhaʔ]	'trouble'
	ka	/ka/	[kaʔ]	keka	[kɪkaʔ]	'bite'
	ka	/ka/	[kãʔ]	keka	[kɪkãʔ]	'say'
Ak	kan	/kan/	[kanʔ]	kenkan	[kɪnkanʔ]	'count'

[hɪ] and [kɪ] do not [otherwise] occur in the surface forms of monosyllabic roots, since [h] in a root is always palatalized before a [-nasal] non-low front vowel while a [k] in a root is always

palatalized before any non-low front vowel.

(Schachter and Fromkin, 1968:162)

Schachter and Fromkin (1968) use rule ordering to describe the failure of palatalization to apply to these reduplicated forms. If the palatalization rule is ordered before reduplication, it will apply only to those forms which have a front, non-low vowel in their unreduplicated underlying representation, such as 'accompany', 'cut', 'divide', and 'burn' above. Those forms which have a low or back vowel, 'trouble' through 'count', will not meet the description of palatalization before reduplication applies and hence will not undergo it. Then reduplication will copy the initial consonant, either palatalized by the prior application of the palatalization rule or else unpalatalized, and the correct results are obtained.

	/gə/	/hI/	/haw/	/ka/
Palatal.	djə	çI	inapplicable	inapplicable
Redup	dʒɪdʒə	çIçI	hIhaw	kIka

The monosyllabic-RED rule [reduplication rule: RW] follows many of the P-rules that affect the shape of the VR. [Verb Root: RW] In particular, it is important to note that it follows the rule of palatalization, P11. Thus if the initial non-vowel of the VR is palatalized, so is its counterpart in RED, and if the initial non-vowel of the VR is not palatalized, neither is its counterpart in RED.

The ordering of the monosyllabic-RED rule after the palatalization rule accounts for the occurrence in surface forms of RED of certain sequences that do not occur in monosyllables of other types. (Schachter and Fromkin, 1968:162)

In this way, rule ordering provides a convenient method for accounting for the apparently irregular behavior of some of these reduplicated forms. If the rule's environment is met before reduplication, then it applies to the unreduplicated forms, as well as the other forms in the language which have nothing to do with reduplication. Then reduplication copies the consonant in the final desired form, either palatalized or

unpalatalized.

In Luiseño,<sup>3</sup> an American Indian language, a /č/ which comes to stand before another consonant or at the end of a word by the application of various processes, changes to /š/. This can be illustrated by the following derivations. ([+R] is a feature which occurs on a particular class of verb arguments which cause stress retraction.) The two forms illustrated are a reduplicated noun and a reduplicated verb.

	/čapomkat + um/	'liar'	/čik <sup>W</sup> i:-/	'to be sad'
Reduplication	čáčapomkat + um		čik <sup>W</sup> ičik <sup>W</sup> i:- <sup>h</sup>	[+R]
Stress Assignment	čáčapomkat + um		čik <sup>W</sup> ičik <sup>W</sup> i:-	[+R]
Stress Retraction	-----		čik <sup>W</sup> ičik <sup>W</sup> i:-	[+R]
Syncope	čáč pomkat + um		čik <sup>W</sup> ič k <sup>W</sup> i:-	[+R]
Vowel Shortening	-----		čik <sup>W</sup> ič k <sup>W</sup> i -	
/č/ to /š/	čáš pomkat + um		čik <sup>W</sup> iš k <sup>W</sup> i -	
Output	čášpomkatum	'liars'	čik <sup>W</sup> išk <sup>W</sup> i-	'to suffer'

However, when adjectives are derived from verbs by reduplication, the /č/ to /š/ rule fails to apply. The output of the reduplication rule is  $C_1V_1C_2V_2 - C_1V_1C_2V_2 + i + \check{c}$ , where  $C_1V_1C_2V_2$  is a verb root,  $\check{i}$  is a nominalizer (deleted later by a rule that does not concern us here), and  $\check{c}$  is an absolutive ending. These adjectives have roughly the same derivation as the noun and verb illustrated above, as can be seen by comparing the following unreduplicated and reduplicated forms.

?áva-	'to be red'	?avá?vaš	'pink'
máha-	'to stop'	mahámhaš	'slow'
šá:wa-	'to wheeze'	šawášwas	'hoarse'

If the initial consonant of the verb root is /č/, then in the derivation of an adjective from a verb by reduplication, the /č/ to /š/ rule fails to apply.

čara-	'to tear'	čaračraš *čarasraš	'torn'
čoka-	'to be limp'	čukackaš *čukaskaš	'limping'

Munro and Benson (1973:19) considered two alternative methods for handling these data. One was to attempt to reorder the reduplication rule after the /č/ to /š/ rule. The other was to somehow mark the root. They rejected the reordering because it required a reformulation of the reduplication rule such that the new reduplication rule must include a recapitulation of the previous rules of stress retraction and syncope. They were also unable to use the independently needed feature [+R] to block the application of the /č/ to /š/ rule in derived adjectives, and thus they were forced to postulate a feature [-č/ to /š/ rule] which they used to mark the root portion of the adjective-formation forms.

The three examples presented so far from Madurese, Akan, and Luiseño illustrate how the same phenomenon, failure of a phonological rule to apply to reduplicated forms, can be treated in wholly different manners. The following examples illustrate how a similar situation, the overapplication of a phonological rule to reduplicated forms, can also be treated in different ways.

In Tagalog,<sup>5</sup> the future tenses are formed by copying  $C_1V_1$  of the base of the verb stems. The present is distinguished from the future by the infix /-um-/. The unreduplicated form with the infix /-um-/ is called the modal.

<u>MODAL</u>	<u>FUTURE</u>	<u>PRESENT</u>	<u>GLOSS</u>
s-um-úlat	su-súlat	s-um-u-súlat	'write'
um-íbig	i-íbig	um-i-íbig	'wish'

Instead of using the infix /-um-/, some verbs appear with a variety of prefixes ending in /n/. The final nasal /n/ then undergoes a Prefix Nasal Assimilation rule. By this rule, initial /p/, /b/, /t/, /d/, and /s/ are often replaced by the corresponding homorganic nasal when preceded by a prefix ending in /n/, which drops out as a result of the Prefix Nasal Assimilation process. /k/ is always replaced.

/p/	pamálo?	( paŋ-pálo?)	but	paŋ-parikít
/b/	pamilit	( paŋ-bilmít)	but	paŋ-bambô
/t/	panáli?	( 'paŋ-tali?)	but	paŋ-takíp
/d/	panaláŋin	( paŋ-daláŋin)	but	paŋ-dilíg
/s/	nanaríwa?	( nan-saríwa?)	but	paŋ-sakây
/k/	nenapà?	( naŋ-kapà?)		

In those cases where the change does not occur, /ŋ/ may be assimilated to following dentals and is usually lost before nasals.

/d/	mandurúkit	~	mandudúkit	(An optional rule d → r/V_V applies in the first example.)
/m/	namahála?	(naŋ-mahála?)		

In reduplicated forms, the assimilated nasal appears on both the copy and the original, giving the appearance that Prefix Nasal Assimilation has applied where its environment is not met.

/bigáy/	'give'	mamigáy	mamimigáy	namimigáy
		(maŋ-bigáy)	(maŋ-bi-bigáy)	(naŋ-bi-bigáy)
/sumpâ/	'curse'	manumpâ	manunumpâ	nanunumpâ
		(maŋ-sumpâ	(maŋ-su-sumpâ)	(naŋ-su-sumpâ)
/kúha/	'take'	mañúha	manunuha	nanunuha
		(maŋ-kúha)	(maŋ-ku-kúha)	(naŋ-ku-kúha)
/isdâ/	'fish'	mañisdâ	mañinisdâ	naninisdâ
		(maŋ-isdâ)	(maŋ-i-isdâ)	(naŋ-i-isdâ)
/libák/	'scoff'	manlibák	manlilibák	nanlilibák
		(maŋ-libák)	(maŋ-li-libák)	(maŋ-li-libák)

That this is a true assimilation and not simply the inclusion of the /ŋ/ of the prefix in the structural description of the Reduplication rule can be seen by the following forms which do not assimilate and do not show a copied /ŋ/.

paŋ-bambô	'a club for beating'	paŋ-bambô	'is beating'
paŋ-dilíg	'implement for sprinkling'	paŋ-di-dilíg	'a sprinkling'
		naŋ-di-dilíg	'is sprinkling'

Also, when the Prefix Nasal Assimilation rule fails and Regressive Nasal Assimilation applies instead, the forms manlilibak and nanlilibak result, not \*manlinlibak or \*nanlinlibak, which would be predicted by an analysis



which included /ŋ/ as part of the reduplication rule. Thus, the  $C_1$  of one part is affected by the directly preceding /ŋ/-final prefix, and the  $C_1$  of the other part undergoes the rule also, even though it is not in the proper environment.

These data can be accounted for if the Prefix Nasal Assimilation rule is ordered before reduplication. This will allow it to apply to the part which is directly preceded by the prefix. Then reduplication will copy the changed consonant when it creates the other part. One might also attempt to account for the copying of the nasal with vowel-initial stems (maninisda) by claiming that these forms are really glottal-initial, which is a possible solution, but the feasibility of such a solution is incidental to the discussion at hand.

In Dakota,<sup>6</sup> /k/, /k'/, and /k\ / are palatalized to /c/, /c'/, and /c\ / after the front vowels /e/, /i/, and /ə/, in active transitive verbs. Although there are morphological constraints on when this rule can apply, these constraints generally are responsible for the failure of a rule to apply, rather than its overapplication. But in reduplicated forms, the palatalization rule appears to apply to both the copied part and the original part, even though only one part is preceded by the palatalizing vowel. (In the following examples, a rule of devoicing also appears. It takes /z/, /ž/, and /ġ/ to /s/, /š/, and /ħ/, respectively.)

kāga	'to make'	wic'ákicañcañ'yeya	'quickly he made it for them'
kōza	'to wave'	napé kícoscoza	'he waved his hand to him'

Here again, by ordering palatalization before reduplication, it is possible to account for the above forms. Palatalization will apply first to the unreduplicated forms /wic'ákikağ'yeya/ and /napé kíkoz a/ to yield /wic'ákicağ'yeya/ and napé kícoz a/. Then reduplication must apply before devoicing in order to create the environment for devoicing in /napé kí coz coz a/.

One last example of the overapplication of a phonological rule is from Squamish.<sup>7</sup> Squamish has a series of uvular consonants (/q°, /q¹°, /q/, /q¹/, /ǣ°, /ǣ¹/) in addition to a series of velars (/k°, /k¹/,

/k/, /k<sup>h</sup>/, and /x<sup>o</sup>/), dentals (/t/, /t<sup>h</sup>/, /c/, /c<sup>h</sup>/, /s/), labials (/p/, /p<sup>h</sup>/), laterals (/l/, /l<sup>h</sup>/), palatals (/č/, /č<sup>h</sup>/, /š/), nasals (/m/, /n/), liquids (/l/), glides (/j/, /u/), and glottal stop (/ʔ/).

There are three variants of the stressed vowel /i/. The first one, a close [ê], as in German Weh, appears between two non-uvular consonants.

/cix <sup>o</sup> /	[ce <sup>o</sup> x <sup>o</sup> ]	'reach, get there'
/ciλ/	[ce <sup>o</sup> λ]	'top'
/k <sup>h</sup> in/	[k <sup>h</sup> e <sup>o</sup> n]	'few'

The second variant, [ε<sup>o</sup>] as in English there, appears if a uvular consonant (or non-initial /l/) follows and any consonant precedes.

/λ <sup>h</sup> iq/	[λ <sup>h</sup> ε <sup>o</sup> q]	'arrive'
/t <sup>h</sup> iq <sup>o</sup> /	[t <sup>h</sup> ε <sup>o</sup> q <sup>o</sup> ]	'cold'
/ʃiq/	[ʃε <sup>o</sup> q]	'scratch'
/ʃ <sup>o</sup> iq <sup>h</sup> /	[ʃ <sup>o</sup> ε <sup>o</sup> q <sup>h</sup> ]	'be arrested'
/nq <sup>h</sup> ilus/	[nεq <sup>h</sup> ε <sup>o</sup> ʔos]	'wise'

The third variant, [ei] as in Dutch ei, occurs if a uvular precedes and any other non-uvular consonant follows.

/q <sup>h</sup> it/	[q <sup>h</sup> ei <sup>h</sup> t]	'be morning'
/ʃip <sup>h</sup> /	[ʃεip <sup>h</sup> ]	'get touched, nipped'
/ʃic <sup>h</sup> im/	[ʃεic <sup>h</sup> em]	'itch'
/x <sup>o</sup> alitr/	[x <sup>o</sup> aei <sup>h</sup> Tɾ]	'white man'

The form 'white man' illustrates variant three after non-initial /l/. After initial /l/, variant 1 or 2 may appear depending on the following consonant.

Kuipers writes that in reduplicated forms, "vowels in different syllables may influence one another". For example, in the form

/λ <sup>h</sup> iλ <sup>h</sup> iʃ <sup>o</sup> ai/	'brook trout'
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the first /i/ should appear as variant 1 because it is followed and preceded by non-uvular consonants. The second /i/ should appear as variant 2 because it is preceded by a non-uvular and followed by a uvular (except that in this position, the second /i/ will be a shortened version of the first). This should produce

\*[λ<sup>h</sup>e<sup>o</sup>λ<sup>h</sup>ε<sup>o</sup>ai]

However, there are actually two pronunciations of this form, both irregular.

[λ<sup>1</sup>e<sup>1</sup>λ<sup>1</sup>e<sup>1</sup>ai][λ<sup>1</sup>e<sup>1</sup>λ<sup>1</sup>e<sup>1</sup>εi]

The first example illustrates an irregular occurrence of variant 2 between two non-uvular consonants. The second illustrates an irregular occurrence of variant 1 between a non-uvular and a uvular consonant.

Because of the existence of alternating forms, the Squamish data represents more of a problem for a phonological description than did the previous examples. The rules which assign the different phonetic variants are not optional--everywhere else in the language they apply obligatorily. Rule ordering can account for only one of the irregular forms. If the rule which assigns variant 1 precedes reduplication, then the second irregular form cited above can be derived, but not the first.

	/λ <sup>1</sup> i <sup>1</sup> ai/
i → e	λ <sup>1</sup> e <sup>1</sup> ai
Redup	λ <sup>1</sup> e <sup>1</sup> λ <sup>1</sup> e <sup>1</sup> ai
Output	[λ <sup>1</sup> e <sup>1</sup> λ <sup>1</sup> e <sup>1</sup> εi]

An attempt to order the rule which assigns variant 2 before reduplication to try to derive the other form will not work because the environment for the variant 2 rule is not met until after reduplication has applied, but then only one part of the reduplicated form will undergo the variant 2 rule. Another approach might be to use a feature [+variant 2 rule] or [+variant 1 rule]. However, each feature will derive only one exceptional form each. That is, the feature [+variant 2 rule] will derive only the form with variant 2 in both parts and the feature [+variant 1 rule] will derive only the form with variant 1 in both parts. Whatever the final device chosen to analyze these data is, it will provide no more than a description of the irregularity of these forms as they exist in Squamish. It will not indicate if there is any general principle which might be responsible for this exceptional behavior.

The examples just presented of irregular reduplicated forms illustrate how these forms can be treated in different manners, depending on the situation in each particular language. It is easy to see how a generalization about their behavior could be overlooked. Some forms were analyzed with boundaries, some with rule ordering, and some with exception features. It seems reasonable to question what generalization about these forms is

being missed by a theoretical framework which allows such a variety of devices. I think that if we consider the morphological function which is served by the overapplication or failure of a rule, we will see that the result of both types of irregular rule application is to preserve the identity of the original form and its copy. In each case cited, the failure or overapplication of a rule maintains the identity of the copy and the original which would have been destroyed if the rule had applied to only one part. Thus by not applying to only one part, the failure of a rule maintains the identity. By applying to both parts, even though only one part meets its structural description, the overapplication of a rule changes both parts while preserving the identity between them. I would like to suggest that this tendency to preserve the identity of the original and its copy exists as a universal constraint on the application of phonological rules, at least with respect to reduplicated forms.<sup>8</sup> This tendency can be formulated as follows:

The Identity Constraint: There is a tendency to preserve the  
identity between the copy and the original  
parts in reduplicated forms.

This is not to say that reduplicated forms always result in identical parts. Obviously, they do not, or the examples cited here would not be considered "exceptions". But it does suggest that in those cases where the behavior of a phonological rule is other than expected, this behavior may be due (and in fact usually is) to this tendency toward identity. Once this fact is recognized, it becomes clear that the use of boundaries, exception features, and rule ordering provide no more than a description of the processes in the language, rather than an explanation of the causes of exceptional forms. It would seem that the Identity Constraint does provide an explanation, based on the function of reduplication, which is namely to generate a copy which is identical to the original.

## FOOTNOTES

<sup>1</sup>Stevens (1968) gives only examples with /n/, but states that it is a general rule which fails in reduplicated forms.

<sup>2</sup>Data from Schachter and Fromkin (1968). The dialects are Akuapem (Ak), Asante (As) and Fante (Fa).

<sup>3</sup>Data from Munro and Benson (1973).

<sup>4</sup>The feature [+R] appears only on a particular class of verb arguments. Here the feature is written once for convenience, but it is a segmental feature and should be considered to be marked on each segment of the form /cik<sup>w</sup>i:/.

<sup>5</sup>The Tagalog data is from both Blake (1925) and Bloomfield (1917).

<sup>6</sup>The Dakota data is from Boas and Deloria (1939).

<sup>7</sup>The Squamish data is from Kuipers (1967, 1969).

<sup>8</sup>For further discussion of the Identity Constraint, more data which supports it, and the problems it presents to current theory, see Wilbur (1973).

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# FAULTY REFERENTS AND THEIR RELATIONSHIP TO TENSE

Susan Kay Donaldson

While the matter of reference, designating a particular individual or thing in the real world or in some imagined world, has for some time been intriguing philosophers and generating discussions among them, linguists have generally been content to leave such questions as the truth or falsity of a statement referring to something that doesn't exist to the philosophers and concentrate instead on matters more approachable through syntax or testable with syntactic measures. Postal (1970: 440-1), for example, observed that while there are no unicorns in the real world, a speaker of English can readily tell that in sentence (1)

(1) The unicorn was trying to scratch itself.

both unicorn and itself refer to the same entity, the process of reflexivization having applied just as it would normally in a sentence about something extant in reality. The speaker can then go on to talk about the unicorn just as though it really did exist and in so doing will generate grammatical sentences equivalent in form to those used in talking about the real world. We see this all the time in children's stories (and, for that matter, in fictional literature of all kinds), for instance, where the existence of some supposed entity is set up, and once it has been established, references can be made to it just as to real world beings. Moreover, we are able to understand the stories just because the sentences used follow just the same patterns and restrictions as those we're accustomed to using in referring to real world entities. Since grammatical processes, then, will be the same, no matter what the world, linguists have largely neglected questions related to reference per se, concentrating instead on those related to coreference<sup>1</sup> Recently, however, I have noticed certain sentences where tense assignment hinges on the present existence or nonexistence of the referent. These sentences frequently have to do with the death of one member of a group or with a change in the state of the designate.

Suppose, for example, that one of the speaker's parents is dead but the other is still alive and that the speaker wishes to make a statement referring

to the set of both parents using the present perfect, as in (2):

(2) \*My parents have always been champions of civil rights.

He cannot do so. Nor can he use the simple past tense:

(3) \*My parents were always champions of civil rights.

as this presupposes that both parents are dead (or, with an added clause, say, until a black family moved in next door, that their attitudes have change ). Nor, obviously, can he use the simple present:

(4) \*My parents are champions of civil rights.

as this presumes that both parents are currently alive and also is applicable only to the present state of affairs and says nothing about this having been a continuing outlook of the parents, as the use of the present perfect allows. What our speaker wants to say is something like:

(5) My father was a champion of civil rights in the past, and my

mother was a champion of civil rights in the past, and my

mother continues to be a champion of civil rights in the present.

but the language is inadequate for expressing this notion in one clause. Similarly,

(6) Edward Kennedy's brothers were all active in politics.

but

(7) \*The Kennedy boys  $\left\{ \begin{array}{l} \text{are} \\ \text{have always been} \\ \text{were (always)} \end{array} \right\}$  active in politics.

Since on the surface, without any knowledge of real world facts on the part of the speaker, each of these starred sentences would be perfectly grammatical, and since it is only our knowledge of the actual state of affairs that makes them unacceptable, it might initially appear that what we have here are cases no different from those of the unicorn sentences, where we saw reflexivization applying irrespective of the existence of the noun phrase designating the subject of the sentence. That is, because the noun-verb agreement conforms with our expectations, these, too, might be considered nothing distinct. There is, however, I submit, a distinct difference between these and other sentences referring to nonentities in the real world which makes these deserving of our attention. Notice that if in some imaginary world we are talking about two unicorns both of which were once alive, but one of which is now dead, the same restrictions hold:



determined with regard to some reference point and not being just arbitrarily appended to a sentence. McCawley is largely concerned with the interrelations of tense regarding two separate time periods expressed in the same statement, the use of a past perfect, for example, as related to a past; and he is able to get at this relationship by embedding tenses inside one another as in (9). With such a configuration a past perfect can also refer to a time prior to another past perfect, and McCawley suggests that it is simply facts about occurrences in the world that keep us from going on and on embedding in this way (McCawley 1971:103). Although his configuration is not the same as McCawley's, Huddleston voices a similar thought in respect to this matter:

Tense does not directly situate the associated process in time, but rather orders it with respect to some point of reference, which may be called the axis (or orientation). Thus past, present, and future mean before, simultaneous with, and after the axis, respectively. In the simplest cases the axis is the situation of utterance... (Huddleston 1969:790).

Just as the situation can determine the tense, the tense, conversely, can tell us much about the situation. For example, in the two sentences

(10) a. Bill's sisters are all blondes.

b. Bill's sisters were all blondes.

the tense gives us definite clues about the state of Bill's sisters.

In (10)a they are all alive (cf. \*Bill's sisters are all blondes,

including the one who is { dead  
                          in her grave } ); in (10)b one of two situa-

tions may be true: they may all be dead, or the hair color of all of them may have changed.<sup>3</sup> Note, additionally, that sentence (10)b cannot be used to describe a combination of these two, with half the sisters dead and half with gray hair.

The choice of simple past versus simple present in copular sentences has to do with more than merely whether the subject is dead or alive, however. Sentences like

(11) Einstein is a great inspiration to me.

have frequently been used to show the cooccurrence of the present tense with subjects who are no longer alive.<sup>4</sup> Consider also the following, from a newspaper trivia quiz:



(12) What did J.C. Penney's initials stand for?

(13) Who were Woody Woodpecker's nephews?

(14) Who starred in The Matchmaker? What did she win an Oscar for? (The Daily Illini, January 6, 1973)

The use of the past tense in (12) signifies that J.C. Penney himself is dead, although the initials themselves have not changed meaning.<sup>5</sup> If the present tense corresponding sentence is used,

(12) a. What do J.C. Penney's initials stand for?

then we assume that he is still living. And if we try to rephrase (12) to indicate that the initials are still around, even though the person isn't, the outputs we get seem simply wrong:

(12) b. \*What did J.C. Penney's initials stand for when he was alive?

c. \*What do J.C. Penney's initials stand for, even though he's dead now?

Surprisingly, though, we can get acceptable sentences so long as the initials are separated from the immediate context of the name:

(12) d. What do the letters 'J.C.' stand for in J.C. Penney's name?

While a purist, with a very strict restriction on this matter might conceivably hesitate at the above, I think (12)e would be fine for anyone:

(12) e. What do the letters 'J.C.' stand for in the name J.C. Penney?

These, of course, get progressively farther away from the concept of Penney as a person.<sup>6</sup>

In (13) the past tense has been used, even though Woody Woodpecker and his nephews, being cartoon characters, can hardly be said to be either alive or dead (the only way they could be said to be dead, presumably, is for them to get knocked off during a particular sequence or for the series itself to come to an end and thus 'die' and 'be buried'). Moreover, since the cartoon is still being shown with movies, the present tense would seem a more correct choice (indeed, this is the only correct choice for me). However, a clue as to why this tense was chosen by the newspaper writer may have been provided by one of my informants, who said that she would always use the past tense in referring to the characters because she associated them with her childhood and not with the present, even



though she might see the cartoon at a movie now. Judging them unimportant to her in the present, that is, she would assign to them the past tense, regardless of the state of the cartoon and its characters.

Such involvement of the speaker can also be shown to be at work in (14). Shirley Booth, the actress sought for in the question, is still alive; and movies being what they are, the role she played is still the leading one. Nevertheless, the past tense is used. However, were The Matchmaker to be reshowed, most speakers agree that they would then use a present tense form of the question:

- (14) a. Who is starring in The Matchmaker? It's playing at the Orpheum this weekend.

Not only is the tense distinction not always a factor of deadness versus aliveness, but counter to what we would expect from the first sentences we looked at, we can sometimes get sentences in the present tense referring to a group which is partly still alive, partly dead. We can imagine a conversational exchange like the following:

- (15) a. Adult: Who are your favorite comedians, Tommy?  
Tommy: The Marx brothers! I watch their old movies on TV every night!

In the same situation we can also get the past tense, even though not all of the group are dead:

- (15) b. Adult: Who are your favorite comedians, Tommy?  
Tommy: Well, I don't know. The Marx brothers were, but they've taken them off TV now.

What is operating here to determine the tense is not the referential cohesiveness of the subject, the Marx brothers, but Tommy's perception of them and the way he sees himself as relating to them.

Such involvement of the speaker in assigning tense to the sentence is presumably also involved in (16):

- (16) a. Harry said the arguments in my paper were quite unconvincing.  
b. Harry said the arguments in my paper are quite unconvincing.  
c. Harry says the arguments in my paper were quite unconvincing.  
d. d. Harry says the arguments in my paper are quite unconvincing.

but here the distinctions are much more subtle. In (16)a the use of the past tense in both the matrix sentence and in the complement lends a

distance to them both; the speaker seems to be just reporting Harry's opinion and is no longer involved with the paper himself; it is a thing of the past. To varying degrees in the others, though, we get the feeling that the speaker is still seeking out people's impressions regarding his paper and that he may still make changes in the arguments in it. In (16)d, as we would expect, we get the most immediate sense of the sentence, with the use of the two present tenses.

Regarding this involvement of the speaker in tense assignment, Robin Lakoff writes,

...the choice of tense is based in part on the subjective factor of how the speaker feels himself related to the event. ...in some cases at least, the realness or vividness of the subject matter of the sentence in the speaker's mind is of greater importance in determining the superficial tense to be assigned to the verb than are such factors as relative (real) time of occurrence (Lakoff 1970:841).

The speaker's perception of the incident being spoken of is even more a factor when the added dimensions of the present perfect are considered. This is a bridging tense, used to say that some action which began in the past or which was true in the past is continuing in the present or is also true in the present or is continuing to have an effect on the present. Occasionally, there appears to be little difference between the two, as in

(17) Grace Kelly { was always  
                  { has always been } Stanley's favorite actress;

he wishes she'd go back into show business.

With either tense there seems to exist the possibility for Grace Kelly's return to show business and thus her return to a position of relevance for Stanley. More often, though, the division is distinct, as in

(18) Except for a 'C' in personal conduct in kindergarten, Marvin's

grades { were always  
          { have always been } excellent.

If the speaker uses were, we know that Marvin is no longer in school; if he uses have been, we assume that grades are still a relevant factor for Marvin.

This matter of current relevance is generally used as the chief distinction between the two tenses, past and present perfect (see, for example, Lakoff 1970 and Huddleston 1969, who cites Palmer and Twaddell as

also making the distinction on this basis), although McCawley feels that the possibility of the event's happening is a more decisive factor (although as we have seen with (17), this, too, may not be quite enough). As with the present and past tense, so, too, from the present perfect can we learn about the situation discussed and about the speaker. (19)a is from the same trivia quiz as (12)-(14):

- (19) a. Who has been Prime Minister of Italy for the longest time since World War II?

On first reading our natural assumption is that the man currently in office is the desired answer; more consideration may lead us to the conclusion that this is not necessarily the right answer, but that the speaker has asked the question using the present perfect so as not to keep us from not considering the current Prime Minister as a possible candidate. If the question were asked in the simple past tense,

- (19) b. Who was Prime Minister of Italy for the longest time since World War II?

then we would receive the hint that it's not the present Prime Minister, at any rate; indeed, from this usage, we could conclude that Italy may not even have prime ministers any more. With the use of the present perfect has been there is a link between past and present not provided with the simple past was.

Very much tied up with the matter of tense assignment, as we have seen, since we've been able to make predictions about the subjects of sentences merely on the basis of their tense, is the matter of reference, the second half of our problem. When we get a blocked sentence such as (2) (\*My parents have always been champions of civil rights), the reason seems partly due to the linking nature of the present perfect verb and partly due to the faulty reference of parents, which has a specific entity in the past to refer to, but none in the present. It fails to refer to an entity encompassing both, as the verb tense requires that it do. We can get similarly blocked sentences using a definite description of a past entity in speaking of the present.

Frequently in English the contents of relative clauses are reducible to lengthy noun phrases. Thus, from the woman who taught me music when I was in the fifth grade we can get my fifth grade music teacher and from

something like the kids who I studied with in the third grade, the members of my third grade class. Notice, then, assuming that the speaker is no longer in the fifth grade, that while he can say

(20) a. My fifth grade music teacher was a real bitch.

meaning that when he was in the fifth grade and had her as a teacher, she was a real bitch, (20)b, referring to the present, is out:

(20) b. \*My fifth grade music teacher is a real bitch.

However, (20)c, using the same tense as (20)b, but with the relative clause fully spelled out, is fine:

(20)cc. The woman who taught me music when I was in the fifth grade is a real bitch.

We might suppose that this is because the verb of the relative clause serves to determine the past reference of the referent, thus eliminating the past/present conflicts arising without it. This is probably true. Notice, however, that even without the specific nature of the verb in a relative clause, we can get a good sentence:

(20) d. My fifth grade music teacher is now a real bitch.

Words functioning like now in this sentence to indicate a particular time period Huddleston calls 'unitary point specifiers', dividing them into three groups, those that specify a point with reference to the speech act (e.g. now), those that are anaphoric to a previous utterance (e.g. then), and those like when I was in the fifth grade, which tie the speech act to something outside it. What seems to be happening in (20)d is that the now serves to make a clean break between the two predications (i.e. that (a) there is some woman<sub>i</sub> such that she was my fifth grade music teacher and (b) this woman<sub>i</sub> is a real bitch (now)) and disallowing the confusion resulting from our assuming that both predications are true of the present (i.e. (a) there is some woman<sub>i</sub> such that she is my fifth grade music teacher and (b) this woman<sub>i</sub> is a real bitch). Keith Donnellan has observed,

...when a definite description is used referentially there is a presumption that the speaker believes that what he refers to fits the description (Donnellan 1971:111)

and unless there is an indication in the sentence (such as now in the above examples) that such is not the case, we assume that the description



is going to fit across the board temporally.

We get similar reading with (21)a-d and (22)a-b, assuming the speaker is presently an adult:

- (21) a. \*The members of my Girl Scout troop are all good swimmers.
- b. The members of my Girl Scout troop were all good swimmers.
- c. The members of my Girl Scout troop now have daughters of their own.
- d. \*The members of my Girl Scout troop have daughters of their own.

- (22) a. The members of my third grade class are now in graduate school.

- b. \*The members of my third grade class are in graduate school.

The asterisks here, as before, indicate not absolute ungrammaticality in the sentences themselves, but that the sentences are unacceptable in the context of the speaker's being an adult and the noun phrases' designating past entities. When (21)a, for example, is spoken, it can only mean that all the girls, including the speaker, are currently members of the Scout troop, whereas in (21)b the use of the past tense means that at the time the girls were in the troop they were all good swimmers. The use of now in (21)c allows the use of a designate for a past group to be used with reference to the present; it may be a bit odd for the speaker to still think of the girls from the troop as a cohesive unit, since they no longer are that, but the reference is allowable, whereas (21)d suggests that the troop ought to be learning less about swimming and more in terms of sex education. Similarly, while (22)a is allowable, (22)b can mean only that the referents are simultaneously in the third grade and in graduate school.

Although these sentences have shown us that references to past entities in present contexts are allowable, in other contexts such references get blocked, particularly if there is a change in the state of the referent over the time period. The following actual utterance of my mother's exemplifies just this phenomenon:

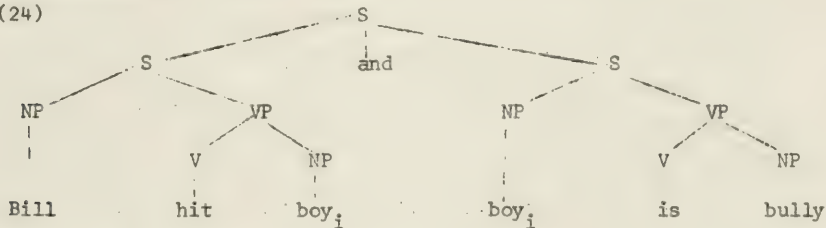
- (23) A woman I went to high school with--well, she was a girl then, I mean--came and sat down with me.

Calling brief attention to this kind of simultaneous, schizophrenic



identity/nonidentity with their caterpillar and **butterfly** sentence, Grinder and Postal note, '...coreferential nominals do not necessarily share all the same sense'. They call such occurrences instances of 'stipulated coreference' (Grinder and Postal 1971:269, n.1). What apparently is happening is that the identity of the individual is perceived as being both preserved and fragmented, as having progressed through both a continuum and a series of one or more sea-changes. The identity of the individual remains, while the reference is to one particular state of his existence.<sup>7</sup> Thus, when the grammar searches in the representation for coreference, it cannot be established. Let us see how this might work. Using the theory that all relative clauses come from underlying conjunctions, the normal means of representing relative clause formation is to say that when two conjoined clauses contain identical occurrence of a particular noun, one of those nouns may get converted to a relative pronoun and moved to the front of its clause. In English this pronoun can then optionally be deleted, e.g.

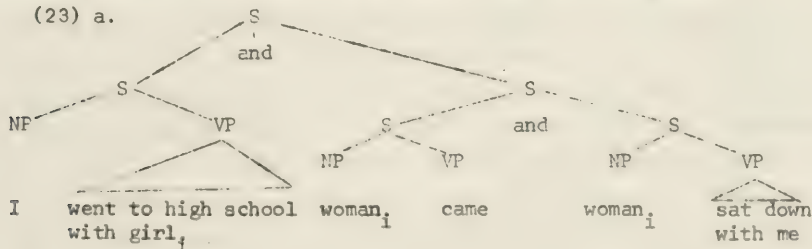
(24)



The boy<sub>i</sub> (who<sub>i</sub>) Bill hit is a bully.

Because the two occurrences of boy<sub>i</sub> are perceived as being identical, relative clause formation can occur. To explain (23), then, we might postulate a structure like (23)a as underlying it at some point:

(23) a.



The grammar, searching through the representation, 'sees' the identical subscripts, but also the nonidentical nouns girl and woman and doesn't know how to handle the situation. If such a simplistic notion can characterize what is happening, this would have to be at a fairly late stage in the derivation, of course, after lexicalization has taken place. Evidence that this may indeed be the case can be seen from the fact that the speaker attempts to utter the statement at all; it does not get blocked at a critically early stage.

Counterevidence, unfortunately, abounds, cases where nonequivalent referents get treated as though they were the same. Østen Dahl, for example, points out the following instances, where the sentence structure isn't even the same, yet we nonetheless get readings of the same action's taking place in the second clause:

(25) John thinks he is smart, and the same holds true of Bill.

(26) John thinks he is smart, and Bill suffers from the same delusion.

(27) John loves his wife, and the same holds true of Bill.

(28) John loves his wife. In this respect he differs from Bill.

(29) John kissed his wife. Bill followed his example. (Dahl 1972:9)

There also exist examples of what George Lakoff has called the hierarchy of anaphora, where nonequivalent noun phrases can be used to refer to the same individual, given knowledge of the pertinent facts about the world, or deductions that can be made from information within the sentence, e.g.

(30) When Mr. Nixon<sub>i</sub> met the reporters, the President<sub>i</sub> declined to say anything.

(31) When Mr. Nixon<sub>i</sub> met the reporters, the bastard<sub>i</sub> declined to say anything.

In such sentences the most definite designate generally has to come first, with the larger, more encompassing referent following.<sup>8</sup> The speaker is presenting them as though they were separate focuses, two pieces of new information. But they cannot be truly new. If the information contained is not already shared, then the hearer will not realize the two descriptions are coreferent. Note, however, that even given knowledge of the world, these two designates must be applicable at the same point in time. If we are speaking of the present, then (32) is unacceptable:

- (32) \*When Mr. Nixon<sub>i</sub> met the reporters, the California senator<sub>i</sub> declined to say anything.

While sentences like (26)-(31) exist, seemingly exemplifying that the concept of strict identity as a condition for deletion is too strict and that there is a need in the grammar for a notion 'the same property' (Dahl 1972:11), Grinder and Postal have found instances where deletion depends on strict word-for-word equivalence. They postulate that the reason (33) is ambiguous, whereas (34), for a number of speakers, can mean only that Pete and his mother were painting Pete's house:

- (33) Pete painted his house and so did his father.

- (34) Pete painted his house and so did his mother.

is that underlying a reading in which Pete's mother could also have been painting her own house would be the occurrence of the NP her house. Because this is not superficially equivalent to his house, deletion cannot occur, and we cannot get a reading in which each of the individuals is painting his own house. Since this must happen very late in the derivation, even after pronominalization has taken place, it provides evidence that there are restrictions in the grammar similar to the failure of exact match between lexical items that we proposed to account for (23).

There seem to be not just equivalence restrictions holding, but that it may also make a difference, at least in relative clause sentences, whether the noun chosen to be the shared one, if the clauses are referring to two separate states of the individual, is that of the past or the present. Although (35) appears a bit odd to me,

- (35) The boy I used to play cowboys and Indians with now supports his family by selling insurance.

most of my informants accepted it. (36), however, was thrown out:

- (36) \*The Woodrow Wilson scholar I used to play hopscotch with back at P.S. 43 is now doing her research on game structure in human behavior.

The feeling is that in using such a sentence, the speaker is declaring the girl to have been a Woodrow Wilson scholar at the time that the two were playing hopscotch. Even the use of the overt temporal specifiers back at P.S. 43 and now and the verb used to is not sufficient to counteract this impression. Perhaps part of the problem lies in our ambivalent

ings toward the designated boy and girl. In our society it's  
 ar when an individual stops being either of these and has to be  
 red to as either a man or a woman. Perhaps, then, a childhood  
 ate can extend to the present from the past, whereas a term of  
 ral for an adult cannot be applied, in backwards fashion, to a  
 . Or perhaps it's a matter of extracting the noun from the  
 ive clause, rather than from the matrix sentence. I would not  
 to claim this any too firmly, however, as it appears to me that  
 ther would balk at saying (23)b just as definitely as she did at

(23) b. \*A girl I went to high school with came and sat down  
 with me.

is would mean that the person referred to is still a girl. Despite  
 there seems to be the feeling that the shared noun must be applicable  
 th states, the past and the present. Even the use of time-machine-  
 insight cannot help us. Suppose that in 1954 Luci Johnson was in  
 ownie troop. I cannot say a sentence like (37)a to express this:

(37) a. \*The future President's daughter<sub>i</sub> was in my Brownie  
 troop, and she<sub>i</sub> was a snob even then.

is a sentence primarily about the past: she was in my Brownie troop  
 e past, and she was a snob in the past, although the even then  
 us we are implying the same thing about the present. The mind  
 es, however, at the designate future President. No one at that  
 knew that Johnson was going to become President; therefore, this  
 be used to designate his daughter at that time. If we use a term  
 fying Johnson's position then,

(37) b. \*The Senate majority leader's daughter<sub>i</sub> was in my Brownie  
 troop, and she<sub>i</sub> was a snob even then.

ill cannot get pronominalization, because the sentence implies  
 the girl is the daughter of the current majority leader. But,  
 isingly enough, if we describe the situation in terms of present  
 instances, a perfectly acceptable sentence results:

(37) c. The late President's daughter was in my Brownie troop,  
 and she<sub>i</sub> was a snob even then.<sup>9</sup>

estingly, removed from our knowledge regarding Johnson, this



sentence is ambiguous: the girl's father may have been dead at the time she was in the Brownie troop, or he may have died in the intervening time period. (37)d, however, would be unacceptable:

(37) d. \*The former President's daughter<sub>1</sub> was in my Brownie troop, and she<sub>1</sub> was a snob even then.

as it would mean that Johnson had already been President at the time spoken of. The description here must work for both states.

One way of characterizing the fit seen to be necessary at least part of the time between a definite description and the entity referred to over a specified time period is to think of the past and the present as two separate worlds such that a referent in one may or may not have a counterpart in the other.<sup>10</sup> Schematically, for some of the sentences we have examined,

Past	Present
parents	mother
Kennedy boys	Edward Kennedy
Scout troop	
third grade class	
girl in high school	woman
girl	Woodrow Wilson scholar
boy	boy

If counterparts in both worlds exist, and if these are expressed by the same nominal form, then we get typical coreferential processes applying: pronominalization, relative clause formation, etc. If the counterpart of an entity from the past exists in the present but is expressed by a different description, then the two will not be collapsible into a single reference term, and what would normally be expressed as, say, a relative clause sentence, will have to be expressed by means of two distinct lexical items in separate clauses. If an item from the past does not have a counterpart in the present, then the past referent can be used with present significance, provided that there is an indicator (e.g. a temporal specifier) that the term no longer describes a present entity. This is in line with Dahl's formulations regarding establishing



such worlds as mental constructs:

It is convenient...to think about propositions in terms of sets of possible worlds--the set of possible worlds where the proposition is true and the set of worlds where it is false. Making the statement that  $p$  can then be said to be the act of committing oneself to the actual world's being one of the worlds where  $p$  is true (Dahl 1977:16).

In this paper we have been involved in the recognition that for at least some statements the actual world is limited to that of the present and that the past can then become a world as separate from this actual world as those imaginary worlds in which the bald present kings of France frolic with the unicorns.

#### NOTES

<sup>1</sup>See, however, Spitzer and Postal's (1971-1976) discussion of

- (i) Harry doesn't have a wife and she is a nag. vs.
- (ii) Harry doesn't have a wife but Bill does and she is a nag.

<sup>2</sup>Notice, however, that more is at work here than simply the continued existence of one member versus the extinction of the other. Jerry Morgan has pointed out that the following is okay:

- (iii) The Rockefeller's have always been rich and powerful.

Similarly, I think we can say

- (iv) The Kennedys have always been active in politics.

What this suggests is that if the reference is to a fairly delimited group, whose members are seen as specific individuals, then the reference must be kept strict, not allowing extension over a time period if the lives of those individuals themselves do not encompass the same period of time. If, on the other hand, the reference is to a more broadly defined group, then such extension is possible.

<sup>3</sup>One speaker said that (11) could be used if one or more were dead gray. For all my other informants, however, the statement was predicated of the whole set of sisters.

<sup>4</sup>Due Schmevling has observed that the idiom hold the record can also be used with dead subjects in the present tense. Thus, prior to 1981 we could have said

- (a) Babe Ruth holds the record for home runs.

<sup>5</sup>Two informants claimed to have gotten this reading.

<sup>6</sup>I owe these sentences to Jerry Morgan.

<sup>7</sup>The same observation is sometimes made in literature. Compare, for example, the following excerpt from a poem:

My mother, like anyone who lived lengthily,  
 Had several lives, maybe four or five,  
 I really only knew her during two.  
 I look at the snapshots--a moment comes  
 When I don't see how they could all be her.... (from Gerald  
 Dumas. An afternoon in Waterloo Park.)

<sup>8</sup>With coordinate sentences with too, as Dahl points out, a similar relationship holds:

(vi) John lives in New York, and Bill lives in the United States, too.

To account for these he proposes, 'A sentence of the form f(a), and g(b), too can be used only if the statement "It follows from the truth of f(a) that g(a) is true" holds' (Dahl 1972).

<sup>9</sup>Georgia Green provided this observation.

<sup>10</sup>In related fashion, Jerry Morgan has noted the distinctions in tense to separate the real world from that established in a subjunctive sentence (Morgan 1969:174).

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## SUPPLETIVE VERB PHRASE DELETION

Timothy Habick

In this paper I interpret the results of a survey taken of approximately 40 speakers' judgements of grammaticality on suppletive verb deletion. I will show that a significant number of my informants, drawn principally from Philadelphia, Pa. and Champaign, Illinois, accept verb phrase deletion with strongly suppletive verbs and that our assumptions about these processes must in some cases be revised.

It is readily apparent that suppletion is not a discrete or binary feature of verbs. Seen from a synchronic point of view, for example, English strong or ablauting verbs are in some sense suppletive, although less so than some 'irregular' verbs, and these, in turn, are less suppletive than suppletive verbs in the strict sense of the term (verbal paradigms with more than one etymologically distinct base form). We may therefore wish to rate verbs on a squish scale according to their degree of suppletion. Now, since it is often a difficult task for speakers to give non-discrete judgement on, say, twenty different suppletive verbs, I have asked the participants in this survey to respond in one of three ways for each sentence: good, bad, or questionable. By weighing affirmative judgements against negative ones and by comparing the resulting ratios against each other, I derive the n-ary hierarchy of Table 1 is derived. 'Questionable' responses were counted as affirmative replies, in the few instances that they occurred, in order to facilitate the calculations. As would be expected, except for a few verbs, acceptability in verb phrase deletion for these verbs is directly proportional to the degree of suppletion of the verbs.<sup>1</sup>

Since English suppletion does not occur within a particular tense paradigm except for the verb be, a natural way to test this phenomenon is by the use of causal and time clauses which involve different tenses. Thus, the majority of the sentences in this survey are of the form

Since you [verb + past,] the others will too. (See Table 4)

Existing theory has assumed that strings such as 22

(22) Since you looked, the others will too.

which is underlyingly 22'

(22') Since you looked, the others will look too.

would be acceptable, but strings such as 19

(19) Since you went home, the others will too.

which is underlyingly 19'

(19') Since you went home, the others will go home too.

would not be acceptable.

My study has revealed that although speakers give judgements about these and other sentences with Verb Phrase Deletion, they are often inconsistent. (See Table 2 for sentences 8 and 17 or 9 and 18, which are repetitions to test consistency.) Several speakers remarked that they really did not like any of the sentences but that some were worse than others. Furthermore, certain speakers had a negative reaction to sentences such as 22 yet liked 19. (See informants BJ and SL but notice, however, their reading for 38.) These speakers seemingly contradict our expectations, disliking what they 'should' like and liking what they should not. This is clear evidence of a fair amount of confusion with these sentences. These and other facts lead me to believe that there are other factors at work in these sentences. Specifically, I suspect that one factor influencing grammaticality for these sentences is tense.

Hypothesis 1: Verb Phrase Deletion involving non-present tenses is in general more marked than that involving present tenses. This is why sentences such as 1, 8, and 11, which we would expect to be unquestionably good since they derive from sentences with underlyingly identical verb forms in both clauses, are rejected by some speakers. For example, out of 46 informants questioned for sentence 1, 13 disliked it (28%). For sentence 8, it is 11 out of 36, or 31%.

Hypothesis 2: Verb Phrase Deletion involving mixed tenses (e.g. present tense in one clause with a deleted underlying future tense in a subordinate clause) is more marked than that involving sentences with a consistent tense marking for both clauses (e.g. present...present). Markedness is increased when one of the tenses involves special inflection (e.g. ablaut, -ing, etc.)



Hypotheses 1 and 2 attempt to account for why BS, JJ, ST, FM, et al. had such low acceptance of verb phrase deletion sentences in general yet often accepted sentences such as 19. Of course, it would be begging the question to state that such sentences are accepted by these speakers because go has a higher frequency of occurrence in actual speech than some others; yet this is perhaps the reason. Actually, I have recently noted many sentences of this type in normal conversation and have also found myself generating them. Many speakers, nevertheless, seem to consider them marked in some way when questioned about them.

The phenomenon described by this hypothesis is a natural result of tense inflection in verbs. Ideally, equi-deletion rules delete constituents of identical shape in deep structure. Ideally, also, the deleted constituent's normal surface realization, if it were not deleted, should be identical to the remaining constituent's surface realization. Sentence 22 fails on both levels: underlyingly, the first verbal constituent is [look + past] but the second is [look + future]; on the surface, the first has the past tense inflection, the second the auxiliary will and zero ending. That is, looked and look are not entirely identical and thus sentence 22 is not completely acceptable.<sup>2</sup> In a certain sense, Verb Phrase Deletion with inconsistent tenses is a case of deletion under 'sloppy identity', and speakers are aware of it. Although I cautioned all of the informants not to worry about what prescriptive grammarians would say about these sentences, it seems that a few (e.g. BS) were so influenced by prescriptive grammar that they assumed that all sloppy identity is bad, although Fowler does not even mention it. It should be observed that BS is an elementary school teacher.

Hypothesis 2(a): More specifically, in Verb Phrase Deletion, the two underlying verbs must be consistent on transitivity. (One cannot be transitive, the other intransitive.)

Thus, 3 is a very unnatural sentence, and only 2 out of 40 accepted it:

(3) After sinking the battleship, the destroyer did.

This sentence is at least doubly bad because it is also using an -ing form to delete a past tense form. Note that 7 got 15 rejections out of 43 (35%):

(7) After John said that he was running, Harry admitted that he already did (had).

Likewise, the following sentence (a), is better, yet still somewhat marked.

- (a) After the inspector said that he was looking into the matter, the chief of police said that he already had.

In general, it seems safe to state that:

Hypothesis 2(b): Under identity, a past tense form can delete a future or conditional tense form more readily (less markedly) than a progressive present or progressive past from can.

Other relationships of this type could be drawn, but this is not the primary concern of this survey. It is evident, however, that the possible sequences of the various tenses will necessarily be determined by our conception of time and causal relationships. Perhaps this is what is wrong with sentences like 12 and 14, which so many people dislike even when a reasonable context for them is explained.

Hypothesis 3: Whenever possible, speakers interpret Verb Phrase Deletion sentences involving verbs with multiple and figurative meanings with a consistent semantic reading for each underlying occurrence of the verb.

Therefore, for 16,

- (16) When the fish bites the bait, tell John that you did too.  
many informants did not think of the figurative or idiomatic interpretation of the phrase to bite the bait but rather imagined a man biting on a fishhook. Similarly, with the familiar sentence,

- (b) After the old man croaked, the frog did too.

many speakers initially understood only one meaning for croak.

Hypothesis 3(a): Speakers assume identity, both of form and of meaning, as a heuristic in the processing of equi-deletion sentences and arrive at interpretations consistent with this heuristic whenever possible.

Hypothesis 4: Verb Phrase Deletion involving suppletive verbs is more marked than that involving regular verbs.

Hypothesis 4(a): Verb Phrase Deletion with common pattern ablauting verbs is less marked than that with more 'irregular' verbs (e.g. buy, bring, etc.), which, in turn, is less marked than that with true suppletive verbs.

Interestingly enough, our squish in Table 1 follows somewhat the expected order. If we assume that the sentences with the lowest percentage of disfavorable judgements are, in general, better than those with a higher percentage, we find that the regular verbs are the best and that the verb be is the worst for Verb Phrase Deletion. Normal ablauting verbs like give (16%), stink (19%) (24 is strange on logical grounds; cf. 4), and come (20%) are less marked than more irregular verbs or verbs with less common ablaut patterns such as do (25%), buy (28%), think (31%), and bring (42%). (We eliminate sentence 25 as irrelevant because think is normally a [+ object] verb; cf. 28.

Observe, however that deletion is not entirely unacceptable with go and be. Indeed, for this verb, out of 39 informants, only 11 or 28% rejected sentence 19. For be, however, some speakers assumed that some present participle was also deleted in sentences like 29, yielding an underlying 29':

(29') Since you're going, I will too.

This can surface for these speakers as 29.

(29) Since you are, I will too.

This process is actually the deletion of both occurrences of some verb with be acting only as auxiliary. Thus, we are not dealing with the deletion of be here, but this phenomenon does reveal that a few speakers can have deletion with -ing forms (cf. sentence 20).

The implications of this study are clear enough. Identity of constituents in equi-deletion cases has been shown not to be a discrete feature, and thus binarity once again fails to predict the correct output. The fact that sentences like 19 are acceptable at all provides evidence that equi-deletion rules operate well before go + past is realized as went. That is, these rules are obviously working on a more abstract structure than surface structure. This also explains why these sentences are more readily produced as output than processed as input, that is, why speakers do produce such strings in conversation but deny them when questioned about them. In deep structure, there is no reason for these verbs to exceptionally fail to undergo this rule: from the point of view of output they are not exceptions. For 19, the second occurrence of go has not been rewritten to its suppletive surface realization at the point where Deletion takes place.

On the other hand, the recipients in the speech chain, such as my informants, tend to balk somewhat at these sentences because they violate their processing strategies. (See Hypothesis 3(a).) In other words, as input, these sentences do not comply with the assumed identity for equi-deletion sentences and are thus opaque. Seen in this light, the relatively high acceptability of 19 is not surprising. Many speakers have no qualms about generating this sentence. And since go is a high frequency verb, other speakers have simply become accustomed to hearing it in these formations and no longer consider it marked.

#### Footnotes

<sup>1</sup>From the point of view of each informant's idiolectal consistency, several interesting remarks can be made. (See Table 2) Out of 39 sentences, acceptability ranged from 34 (KF) to 7 (BS). It is informative to observe the similarity of the responses of parents and siblings. RJ and BJ are sons of JJ. Considering that, in all cases, each informant was interviewed alone in order to avoid peer and other influences, the similarity in the judgments of the members of this family is remarkable. Compare especially sentences 11-21 and 31-39. FM is the daughter of HH and SH, and all three accepted very few of the sentences. Nevertheless, there does not seem to be a striking similarity in the choice of acceptable sentences.

Husband-wife pairs include, respectively, JL and SL, GM and FM, SH and HH, and LJ and RJ. No interesting correlations were observed.

<sup>2</sup>In a separate survey, when questioned about sentences (a) and (b), many speakers' grammars were not sensitive enough to detect a difference in acceptability, finding them both acceptable. Yet most of those who did find a difference judged (a) as better than (b). SH, however, had the opposite judgment.

(a) Since you hit the bastard, I will too.

(b) Since you looked at the picture, I will too.

This supports the identity of form hypothesis where hit...hit is preferred over look...looked.

Table 1

## Verb Phrase Deletion Squish

Sentence	Verb	Percentage
39	goes	12%
38	decided	15% (regular verb)
30	gave	16%
22	looked	18% (regular verb)
4	stunk	19%
36	told	19% GOOD
21	came	20%
37	broke	23%
33	did	25%
23	sang	25%
26	sank	25%
34	knew	27%
31	bought	28%
(1	sank (...sank)	28%)
19	went	28%
35	blew	31%
28	thought (of it)	31%
32	brought	42%
25	thought	50% BAD
24	stunk	53%
27	were	76%
29	are	81%
20	were (happy)	100%





Table 3

## Informants

<u>Initials</u>	<u>Sex</u>	<u>Home</u>	<u>Age*</u>	<u>Education/Occupation</u>
BS	M	Philadelphia	29	M.A./teacher
ST	M	N.Y.	17	H.S.
LJ	F	N.Y.	29	B.A./Arts
RJ	M	Champaign/N.J.	29	M.A./Science
BJ	M	Champaign/N.J.	27	M.A./Science
JJ	F	Champaign/N.J.	45	B.A./Arts
SL	F	Philadelphia	45	H.S.
JL	M	Philadelphia	45	H.S./Fireman
FM	F	Philadelphia	29	H.S.
GM	M	Philadelphia	29	H.S./Electrician
SF	M	Philadelphia	24	B.A./Science
HH	F	Philadelphia	45	H.S.
SH	M	N.Y./Phila.	45	H.S./Salesman
GW	M	Champaign	25	M.A./Linguistics
GT	M	Sandwich, Ill.	25	B.A./Science
AS	F	Philadelphia	22	B.A./Arts
TB	M	Philadelphia	23	M.A./Arts
ES	M	Chicago	25	M.A./Arts
DP	M	Chicago	26	M.A./Linguistics
SW	M	Champaign	26	M.A./Linguistics
SD	F	Champaign	25	M.A./Linguistics
KF**	M	Taylor, Pa.	27	M.A./Arts
JS	M	Philadelphia	23	B.A./Arts

\*Some ages are approximate.

\*\*Under influence of marijuana.

Table 4

## Verb Phrase Deletion Sentences

1. After the Titanic sank, so did the rafts. 13/33\* 28%
2. When the Titanic has finally sunk, the rafts will too. 18/21 46%
3. After sinking the battleship, the destroyer did. 40/3 93%
4. Those skunks have really stunk in the past, the old man said, and this year they will too. 8/34 19%
5. After the skunks stank (stunk, if preferred) the room up, John said that the people would too. 26/17 61%
6. After John ran in the race, Harry said that he would too. 6/38 14%
7. After John said he was running, Harry admitted that he already did (had) 15/28 35%
8. Since Mary went, Alice did. 11/25 31%
9. After Harry bought a set of books, John said he would too. 7/27 21%
10. Since the rafts are sinking, the people will too. 13/17 43%
11. If the rafts sank, the men did too. 15/16 48%
12. When the women type that paper, tell them that you did too. 21/13 62%
13. Since his father's tall, John will. 32/0 100%
14. When the women type that paper, tell them that you did it too. 19/13 60%
15. When John buys a house, tell him that you did too. 14/19 43%
16. When the fish bites the bait, tell John that you did too. 24/10 71%
17. Since Mary went, Alice did. 11/21 33%
18. After Harry bought a set of books, John said he would too. 3/23 12%
19. Since you went home, the others will too. 11/28 28%
20. Since you were happy, the others will too. 38/0 100%
21. Since you came, the others will too. 8/31 21%
22. Since you looked, the others will too. 7/32 18%
23. Since you sang, the others will too. 9/26 25%
24. Since you stank (stunk), the others will too. 18/16 53%
25. Since you thought, the others will too. 19/19 50%
26. Since these boats sank, the others will too. 14/21 25%
27. Since you were, the others will too. 31/10 76%

28. Since you thought of it, the others will too. 11/18 31%
29. Since you are, the others will too. 30/7 81%
30. Since you gave, others will too. 6/31 16%
31. Since you bought alot, the other customers will too. 7/18 28%
32. Since you brought a gift, the others will too. 11/15 42%
33. Since you did well, the others will too. 6/18 25%
34. Since you knew the answers, the other children will too. 7/19 27%
35. Since you blew the candles out, the other children will too. 8/18 31%
36. Since you told a story, the other students will too. 5/21 19%
37. Since you broke the record, others may too. 6/20 23%
38. Since you decided to go, the others will too. 4/22 15%
39. If he goes, I will. 3/22 12%

\*The numerals after the sentences indicate the number of disfavorable and favorable responses, respectively. For example, 33 informants accepted sentence (1) and 13 people disliked it. The percentages refer to the percentage of disfavorable responses. For example, 28% of those questioned rejected sentence (1).





# ARE RIGHTWARD MOVEMENT RULES UPWARD BOUNDED?<sup>1</sup>

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Ross claims that "any rule whose structural index is of the form--- A Y, and whose structural change specifies that A is to be adjoined to the right [italics ours] of Y, is upward bounded." (Ross 1967, 3'7). To put it briefly, all rightward movement rules are upward bounded. But there are counter examples to Ross's claim. We will present evidence from two languages--Hindi and Telugu--belonging to two different language families to show that Ross's claim (to be called the Upward Bounded Constraint in subsequent discussion) is too strong.

The Extraposition transformation in Hindi moves an embedded sentence to the right of the VP of the matrix sentence. Sentences such as (1) are the result of applying the Extraposition transformation to an underlying representation as in (2).

- (1) [moohan ne yah kahaa [ki uskaa bhaaii aayaa hai]] S<sub>1</sub> S<sub>2</sub> S<sub>2</sub> S<sub>1</sub>

Mohan it said that his brother has come

Mohan said that his brother had come.

- (2) [moohan ne { [uskaa bhaaii aayaa hai] yah] kahaa ] S<sub>1</sub> NP S<sub>2</sub> S<sub>2</sub> NP S<sub>1</sub>

However, when sentence (2) is embedded into another sentence it yields sentences such as (3a) as well as (3b).

- (3) a. [saritaa ne { [moohan kaa yah kahnaa] S<sub>1</sub> NP S<sub>2</sub>

Sarita Mohan poss. it saying

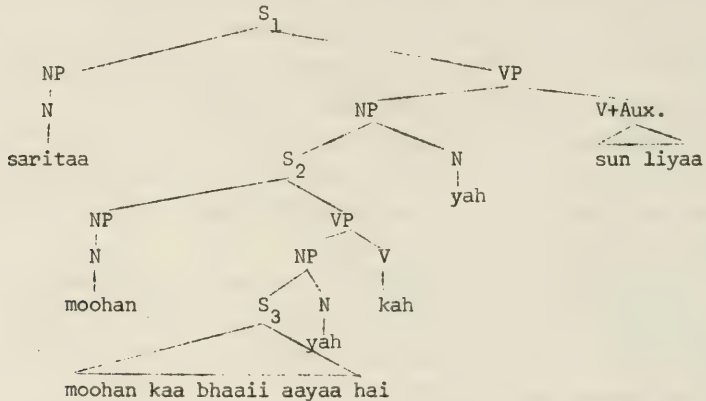
ki uskaa bhaaii aayaa hai ] ] sun liyaa ] S<sub>3</sub> S<sub>2</sub> S<sub>2</sub> NP S<sub>1</sub>  
that his brother has come heard

Sarita heard Mohan saying that his brother has come.

- b.  $\left[ \begin{array}{c} \text{saritaa} \\ S_1 \end{array} \right] \text{ ne } \left[ \begin{array}{c} \text{moohan kaa yah kahnaa} \\ S_2 \end{array} \right] \text{ sun liyaa}$   
 $\left[ \begin{array}{c} \text{ki uskaa bhaaii aayaa hai} \\ S_3 \end{array} \right] \left[ \begin{array}{c} \\ S_3 S_1 \end{array} \right]$

The underlying representation of sentences in (3) is roughly as in (4).  
 Notice that in Hindi (as well as in Telugu) the normal word order is SOV.

(4)



However, in sentence (3b)  $S_3$  is immediately dominated by  $S_1$ . Sentences of this type are of significance in view of the Upward Bounded Constraint on rightward movement rules because of its apparent contradiction.

In an attempt to save the Upward Bounded Constraint, one may wish to argue that the  $S_2$  node in (4) is 'pruned' by the time Extraposition applies, which moves  $S_3$  to the right of  $S_1$ . But such an argument is not valid because:

- (i) There is no pruning convention which prunes an S node when it is still branching into NP and VP and there is no discernible motivation for postulating such a convention now.
- (ii) There is positive evidence to show that the S node of a complement (such as  $S_2$  in (4)) is retained in the derived constituent structure after the application of Complementizer Change transformation and this evidence comes from (a) reflexivization and (b) Equi-NP Deletion in Hindi.

a) In Hindi, just as in English, for reflexivization to apply, the clause-mate constraint must be satisfied by the coreferent NPs. However, if the  $S_2$  node is erased, then the reflexive pronoun apne aap 'oneself' in sentences such as (5) and (6) should ambiguously refer to the underlying subjects of  $S_1$  or  $S_2$ , but it does not.

- (5)  $\left[ \begin{array}{ccccc} \text{moohan nee} & [\text{meeraa apnee aapkoo gaalii deenaa}] & \text{sun liyaa} \end{array} \right]$   
 $\begin{array}{ccccc} S_1 & S_2 & S_2 & S_1 \\ \text{Mohan} & \text{my} & \text{to oneself} & \text{scolding} & \text{heard} \end{array}$   
 Mohan heard me scolding myself.

- (6)  $\left[ \begin{array}{ccccc} \text{meeree apnee aapkoo gaalii deene see} & \end{array} \right]$  moohan  
 $\begin{array}{ccccc} S_1 & S_2 & S_2 \\ \text{my} & \text{to oneself} & \text{because of scolding} & \text{Mohan} & \end{array}$   
 $\left. \begin{array}{c} \text{koo kyaa nuksaan hai} \\ S_1 \end{array} \right\}$   
 to what loss is  
 How does it affect Mohan if I scold myself?

b) As argued in Subbarao (in preparation), there is a transformation in Hindi which deletes the occurrence of an identical NP in a subordinate clause transforming underlying structures such as (7) into (8).

- (7) reekhaa  $\left[ \begin{array}{cc} \text{reekhaa vahãã jaa} \end{array} \right]$  yah nahĩĩ caahtii  
 $\begin{array}{ccccc} S_2 & S_2 \\ \text{Rekha} & \text{Rekha there go} & \text{it not} & \text{wants} \end{array}$   
 (8) reekhaa vahãã jaanaa nahĩĩ caahtii  
 Rekha there to go not wants  
 Rekha does not want to go there.

This transformation is similar to Equi-NP Deletion in English in that the deleted NP is commanded by the deleting NP and not vice versa. Note that if the sentence node of the complement is erased after the Complementizer Change transformation, then Equi-NP Deletion in Hindi will never apply and the grammar cannot generate grammatical sentences such as (8).

The other possibility of applying Equi-NP Deletion in a sentence (i.e. where both NPs command each other), of course, must be rejected because sentences such as (9) will be generated which are ungrammatical in the intended sense.

- (9) \*reekhaa ne doṣ diyaa

Rekha           blamed

Rekha blamed herself.

This clearly indicates that not only there is no motivation to delete the  $S_2$  node in (3b) but there is strong evidence to retain it.

Returning to the sentence (3b) we notice that the following examples illustrate that this is not the only sentence type, nor is Hindi the only language, that exhibits such a phenomenon.

#### I. Movement from adverbial sentences

- (10) a. moohan kee yah kahtee        hii        ki

Mohan Poss. it say as soon as that

kooii aayaa hai saritaa nee darvaazaa khool diyaa

someone has come Sarita door opened

As soon as Mohan said that someone had come, Sarita opened the door.

- b. moohan kee yah kahtee hii sarita nee darvaazaa

khool diyaa ki kooii aayaa hai

- (11) a. moohan kee yah kahnee par ki kooii aayaa hai

Mohan Poss. it saying on that someone has come

saritaa nee darvaazaa khool diyaa

Sarita door opened

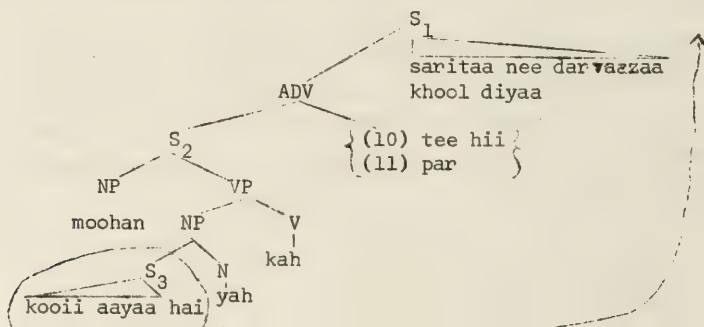
When Mohan said that someone had come, Sarita opened the door.

- b. moohan kee yah kahnee par saritaa nee darvaazaa khool diyaa

ki kooii aayaa hai

The structure underlying the sentences in (10) and (11) is approximately as in (12) where the arrow shows the movement for the (b) sentences.

- (12)

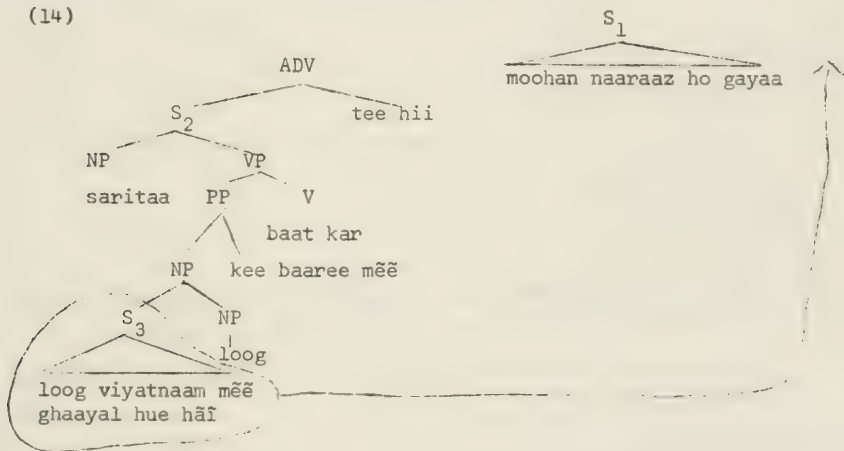


## II. Movement of a relative clause<sup>2</sup>

- (13) a. saritaa kee joo loog viyatnaam mēē ghaayal hue hāī  
 Sarita Poss. WH people Vietnam in wounded became  
 unkee baaree mēē baat kartee hii moohan naaraaz hoo gayaa  
 them about talk as soon as Mohan angry became  
 Mohan got angry as soon as Sarita talked about the people who  
 got wounded in Viet Nam.
- b. sarita kee un loogōō kee baaree mēē baat kartee hii  
 Sarita Poss. those people about talk as soon as  
 moohan naaraaz hoo gayaa joo viyatnaam mēē ghaayal huee hāī  
 Mohan angry became WH Viet Nam in wounded became

The structure underlying (13) is as in (14).

(14)



## III. Sentences with extraposed complex sentences

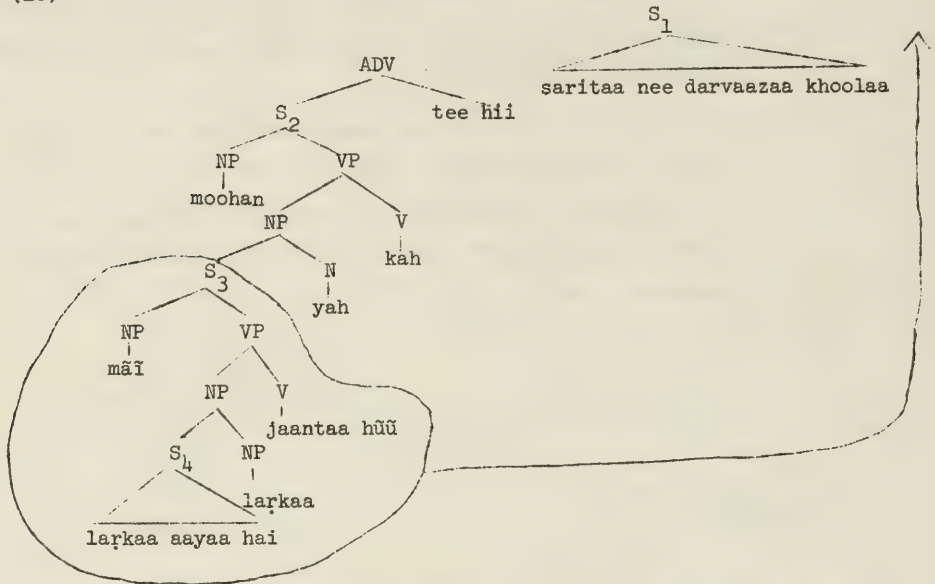
- (15) a. moohan kee yah kaatee hii ki joo larḱaa aayaa hai māī  
 Mohan Poss. it say as soon as that WH boy has come I  
 uskoo jaantaa hūū saritaa nee darvazaa khoolaa  
 him know Pres.Sarita door opened  
 As soon as Mohan said that he knows the boy who had come,  
 Sarita opened the door.



- b. moohan kee yah kahtee hii saritaa nee darvaazaa khoolaa ki joo  
 larḱaa aayaa hai māī uskoo jaantaa hūū

The underlying representation for (15) is as in (16)

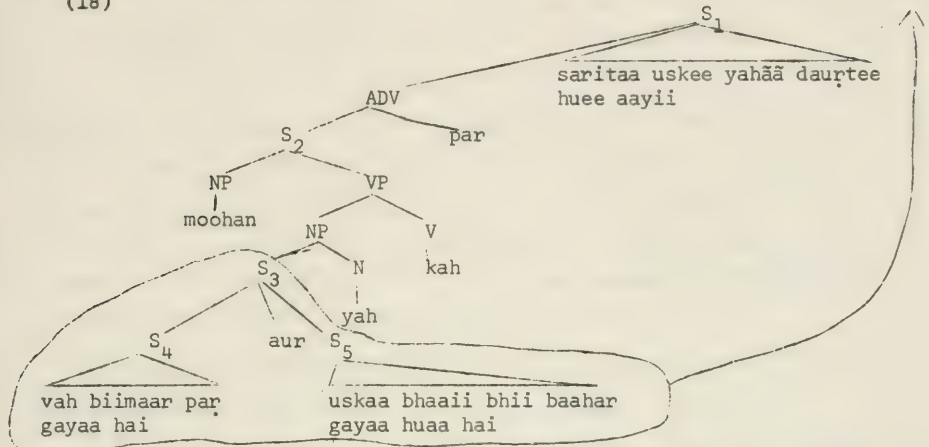
(16)



- (17) a. moohan kee yah kahnee par ki vah biimaar par gayaa hai aur  
 Mohan Poss. it on saying that he ill has fallen and  
 uskaa bhaaii bhii baahar gayaa huaa hai, sarita uskee yahāā  
 his brother also outside went Sarita to his place  
 daurṭee huee aayii  
 running came  
 Sarita came running to his place when Mohan said that he fell  
 ill and that his brother was also out.
- b. moohan kee yah kahnee par saritaa uskee yahāā daurṭee huee aayii  
 ki vah biimaar par gayaa hai aur uskaa bhaaii bhii baahar gayaa  
 huaa hai

The underlying representation for (17) is as in (18)

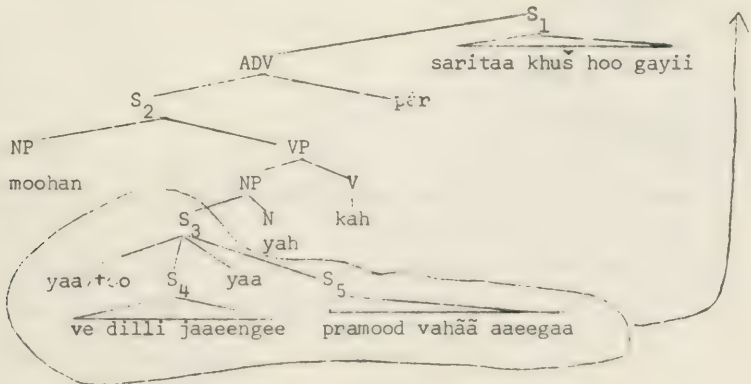
(18)



- (18) a. moohan kee yah kahnee par ki yaa too ve dillii jaaengee  
 Mohan Poss. it saying on that either they Delhi will go  
 yaa pramood vahāā aaeegaa, saritaa khuś hoo gayii  
 or Pramod there will come Sarita happy felt  
 Sarita felt happy when Mohan said that either they will go to  
 Delhi or Pramod will come there.
- b. moohan kee yah kahnee par saritaa khuś hoo gayii ki yaa to ve  
 dillii jaaengee yaa pramood vahāā aaeegaa

The structure underlying (19) is as in (20)

(20)

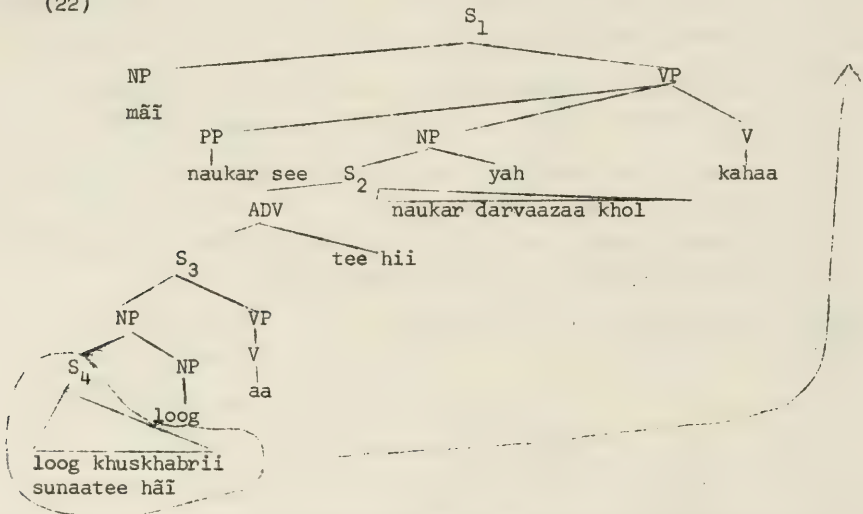


## IV. Extraposition from two sentences'deep'

- (21) a. māī nee naukar see joo loog hameesaa khushhabrii  
 I servant with WH people always happy news  
 sunaatee hāī unkee aatee hii darvaazaa khoolne koo kahaa  
 tell Pres. their come as soon as door to open said  
 I asked the servant to open the door as soon as those people  
 arrive who always bring happy news.
- b. māī nee naukar see un loogōō kee aatee hii darvaazaa  
 I servant with those people come as soon as door  
 khoolnee koo kahaa joo hameesaa khushhabrii sunaatee hāī  
 to open said WH always happy news tell Pres.

In the underlying representation, (21) appears as (22).

(22)



## V. Sentences with plural extrapositions (Upward Bounded Constraint violated twice in the same sentence).

- (23) a. māī nee joo loog pramood kee yah baat kahte hii  
 I WH people Pramod Poss. this thing say as soon as  
 ki vee nikamme hāī naaraaz ho gae unke aatee hii  
 that they worthless are became angry they come as soon as

darvaazaa khoolaa

door opened

I opened the door as soon as those people came who became angry  
as soon as Pramod said that they were worthless.

b. mǎi nee un loogōō kee aatee hii darvaazaa khoolaa joo

I those people come as soon as door opened WH

pramood kee yah baat kahtee hii naaraaz ho gae

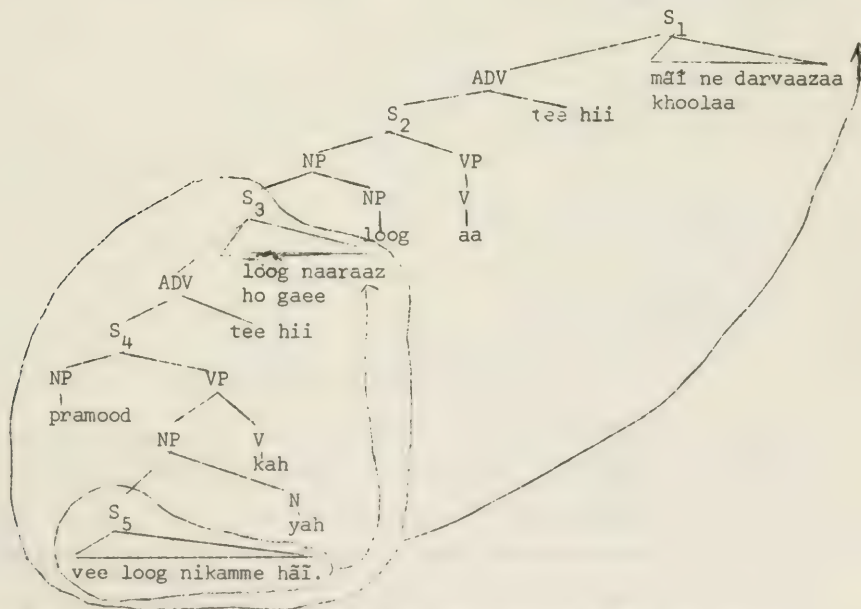
Pamod Poss. this thing say as soon as became angry

ki vee nikammee hāi

that they worthless are

The underlying representation of (23) is as in (24).

(24)



Notice that in (24)  $S_5$  is moved out of  $S_4$  to the right of  $S_3$  and the whole  $S_3$  is moved out of  $S_2$  to the right of  $S_1$ . Notice also that  $S_5$  or  $S_5$  along with  $S_4$  cannot be moved out of  $S_3$  because of the Complex NP Constraint.

As mentioned earlier, there is evidence from Telugu also to show that the Upward Bounded Constraint is incorrect. For example, let us consider sentences such as (25) and (27) from Telugu. In (25b) sentence  $S_3$  is moved to the right of the VP of  $S_1$  and in (27b)  $S_4$  is moved to the right of the VP of  $S_1$ .

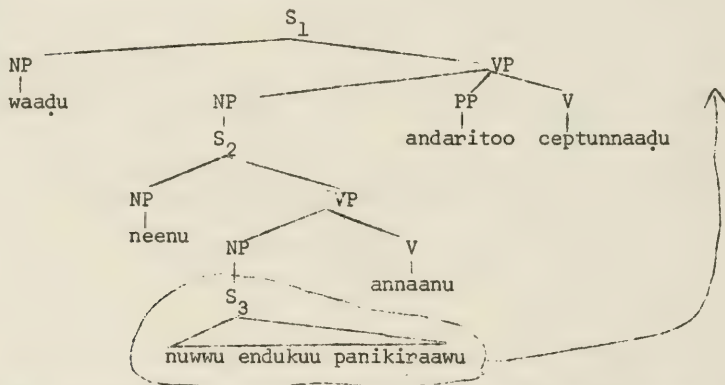
- (25) a. waaḍu neenu nuwwu endukuu panikiraawu  
 he I you for anything useless  
 ani annaanu ani andaritoo ceptunnaaḍu  
 that said that with everybody is telling

He is telling everybody that I said that he was not fit for anything.

- b. waaḍu neenu annaanu ani andaritoo ceptunnaaḍu nuwwu endukuu  
 panikiraawu ani

The underlying representation of (25) is as in (26).

(26)

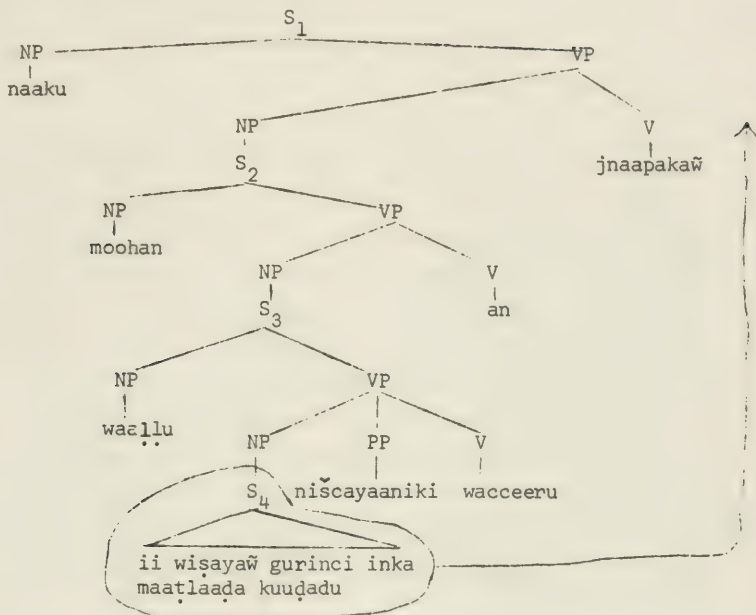


- (27) a. moohan waḷḷu ii wiṣayaḡ gurinci inka maatḷaada kuḍadu ani  
 Mohan they this matter about further should not talk that  
 niścayaaniki wacceeru ani annaṭḷu naaku jñāapakaḡ  
 to the decision came that said that to me remembrance  
 I remember that Mohan said that they decided not to discuss this  
 matter any more.
- b. moohan waḷḷu niścayaaniki wacceeru ani annaṭḷu naaku jñāapakaḡ  
 ii wiṣayaḡ gurinci inka maatḷaada kuḍadu ani



The structure underlying (27) is as in (28).

(28)



The existence of the (b) sentences above clearly indicates that the Upward Bounded Constraint is too strong and that it cannot be a universal. Further, some native speakers of Hindi felt that (a) sentences such as (23a) are ungrammatical. This indicates that the Upward Bounded Constraint is obligatorily violated in some cases, i.e., the rightward movement rule obligatorily moves the constituents above the sentence boundary.

#### FOOTNOTES

<sup>1</sup>We are thankful to Y. Kachru and J. Morgan for their valuable comments and suggestions. We are also thankful to T.K. Bhatia, K. Chatterji, Y. Kachru, Z. Manawwar, and P.K. Varshney for listening to our Hindi sentences and deciding on their grammaticality.

<sup>2</sup>The fact that, similar to NP complements, the relative clauses in Hindi also violate the Upward Bounded Constraint was pointed out to us by J. Morgan.

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# ROSS' CONSTRAINTS AND RELATED PROBLEMS IN YORUBA

Herbert Stahlke

## Introduction<sup>1</sup>

This paper considers the behavior of certain Yoruba deletion and pronominalization phenomena with respect to Ross' constraints. In order to approach several of the problems, it will be necessary first to reanalyze some related areas of Yoruba syntax, including subject-verb agreement and relative clause formation. I will argue that the dependent subject pronouns are, in fact, clitics, and that they arise by a subject-verb agreement rule. I will then show that relativization is a deletion process in Yoruba, rather than a movement process as it has commonly been treated (Awobuluyi 1967). I will then illustrate the behavior of Ross' constraints, and I will argue that a distinction must be made between those constraints which require the mention of some S node in their statement and those that do not and that constraints of the former type are stronger in an easily specifiable way.

## Yoruba Pronoun Forms

Yoruba has several sets of subject pronoun forms whose distribution is conditioned morphologically. All dependent pronoun forms are derivable from the independent forms. The pronouns are as follows:

### (1) Yoruba subject pronoun paradigms

#### (a) Independent pronouns

èmi	'I'	àwa	'we'
ìwo	'you (sg.)'	èyin	'you (pl.)'
òun	'he, she, it'	àwọn	'they'

## (b) Dependent pronouns

(i) Preterit	(ii) Negative and Future (yô)
mo a	mi a
o ɛ	o ɛ
ó wɔ̃n	ø wɔ̃n
(iii) Progressive	(iv) Future (á)
mò à	mà à
ò ɛ̃	wà ɛ̃
ó wɔ̃n	á wɔ̃n

The subject forms of the first and second plural appear to be derived from the initial vowel of the independent forms. The other plural pronouns differ, if at all, only in tone from the independent forms. I will offer below an explanation for the high tone found on some of the third plural subjective pronouns. Although the singular dependent forms deviate considerably from their corresponding independent pronouns, I will discuss only the third person morphemes and, to a very limited degree, the first person. For an analysis of the second person singular subject pronoun, see Fresco (1971) and Stahlke (1969).

In developing an analysis of the third person singular subject pronoun, the following facts must be accounted for.

- (2) (i) All singular preterit and progressive pronouns end in o.
- (ii) All third person singular and plural forms except in the negative and future (yô) paradigm bear a high tone.
- (iii) The third singular is segmentally zero in the negative and future (yô).

Since two sets of singular subject pronouns end in o, and no plurals or pronouns from other paradigms do, the morphological status of this vowel as a part of the pronominal system must be considered. Several facts suggest that it is not actually a part of the pronoun system. For example,

the phonology of Standard Yoruba places the condition on CV sequences that nasals be followed by one of the three nasalized vowels  $\hat{i}$ ,  $\hat{u}$ , and  $\hat{a}$ , not by an oral vowel. Thus the form mo is a morpheme structure violation and might be considered polymorphemic. The distribution of the vowel o in other tenses lends support to the hypothesis that this vowel does not belong to the pronominal system and that mo consists of mi + o. As the affirmative and negative preterit and future ( $y\hat{o}$ ) forms below illustrate, the vowel o occurs consistently before the verb, and its distribution is easier to state in terms of the verbal elements of the verbal string than in terms of the pronominal and tense/aspect markers.<sup>2</sup> Thus it is not to be considered a part of the subject pronoun.

(3) (i) Preterit affirmative

mo lɔ ilé	'I went home.'
o lɔ ilé	'You went home.'
ó lɔ ilé	'He went home.'

(ii) Preterit negative

mi (k)ò lɔ ilé	'I didn't go home.'
o ò lɔ ilé	'You didn't go home.'
ø kò lɔ ilé	'He didn't go home.'

(iii) Future affirmative

mi (y)ô lɔ ilé	'I will go home.'
o ô lɔ ilé	'You will go home.'
ø yô lɔ ilé	'He will go home.'

(iv) Future negative

mi kî yô lɔ ilé	'I won't go home.'
o kî yô lɔ ilé	'You won't go home.'
ø kî yô lɔ ilé	'He won't go home.'

Fresco (1970) agrees that the o found in the preterit subject pronoun series is not morphologically a part of the pronoun. However, he argues that lexically the third singular pronoun consists of the high tone which remains after the vowel has been removed. His analysis fails to account



for two facts about this high tone. First, the high tone pronoun would, like the ô pronoun, have to have a zero alternant before the negative and future morphemes. Such morphological alternation is not impossible, but an analysis which avoids it would be simpler. The second factor overlooked by Fresco's analysis is the distribution of the high tone which he identifies as the pronoun. The following examples will illustrate this.

(4) (i)	ô lə	'He went.'
	kô lə	'He didn't go.'
	yô lə	'He will go.'
(ii)	wôn lə	'They went.'
	wôn kô lə	'They didn't go.'
	wôn yô lə	'They will go.'
(iii)	ômô lə	'The child went.'
	ômô kô lə	'The child didn't go.'
	ômô yô lə	'The child will go.'

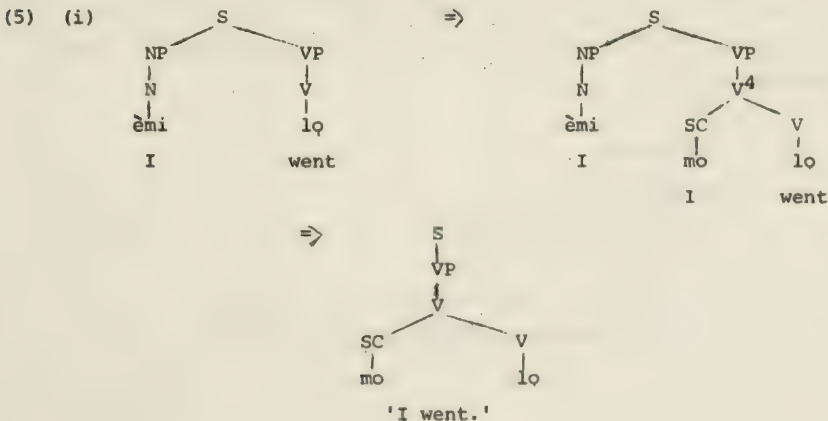
Since the third singular subject pronoun is, as generally recognized, zero before the negative or future (4i), the high tone of ô will also be absent in just those places.<sup>3</sup> This pattern is paralleled in the third person plural subject pronoun (4ii). This pronoun has a high tone in the preterit affirmative, but a mid tone in the negative and future. The mid tone form is probably basic, since all other forms of this pronoun, with the exception of object pronouns occurring after low or mid tone verbs, have mid tone. Thus the high tone in the third plural form has the same distribution as in the third singular. The examples in (4iii) represent a large class of sentences in which the subject is an NP containing at least a noun and possibly more. The final vowel of the subject NP has a high tone, regardless of what its basic tone may be, just if the following morpheme is not the negative or the future marker. As the examples in (4) show, the high tone which appears in the third person preterit forms is independently predictable and thus is not to be interpreted as the third person singular morpheme. Thus the third person singular form of the subject pronoun must

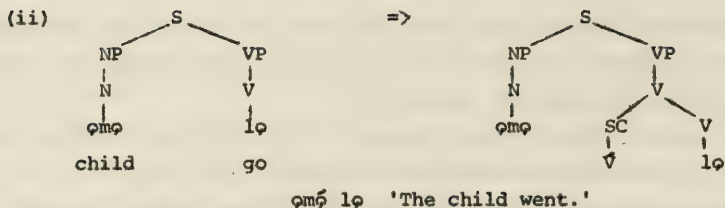
be considered morphologically zero, not only in the negative and future, where this conclusion is obvious, but also in those paradigms in which the vowel o and a high tone are found.

The claim that the subject concord (SC) prefix, the negative marker, and certain tense/aspect markers are morphologically prefixes on the verb is further supported by vowel harmony alternations in some dialects (Bamgboṣe 1967, Awobuluyi 1967, Adetugbo 1968, and Fresco 1971).

### Some Agreement and Coreference Problems

The analysis of the third person pronoun just presented plays an important role in the interpretation of certain syntactic phenomena in Yoruba, including topicalization and the identification of coreferential NP's in complex sentences. Several linguists (Courtenay 1969, Fresco 1971, Schachter 1971, and Stahlke 1969) have claimed that Yoruba, like many other Niger-Congo languages, has a subject-verb agreement or concord rule. This rule attaches a subject concord marker (SC) as the left most constituent of the verb. Thus a surface structure like mo lṓ 'Iwent' is derived from a deeper structure èmi lṓ in which the subject NP is an independent pronoun. This rule is illustrated below.





If the subject NP is a personal pronoun, as in (5i), the appropriate SC is attached to the verb and the subject is deleted. If, as in (5ii), the subject NP is a noun, the SC is simply the high tone whose distribution was illustrated in (4). In this case, the subject NP is not deleted.

Topicalized sentences in Yoruba involve movement of the topicalized NP to the front, subject generally to Ross' constraints. No pronoun copy is usually left behind. The topicalized NP is followed by the thematic particle *ni*, as below.

- (6) Ajá kpa adlẹ = Adlẹ ni ajá kpa  
dog kill chicken chicken Topic dog kill  
The dog killed the chicken. It's the chicken the dog killed.

If it is the subject NP which is to be topicalized, it too is moved to the front, but in the preterit affirmative the particle ō is inserted in subject position. In the negative and future ō is not inserted. This is illustrated in (7).

- (7) (i) Ajá kpa adìe  
dog kill chicken  
The dog killed the chicken.  
=> Ajá ni ó kpa adìe  
dog Topic kill chicken  
It's the dog that killed the chicken.

- (ii) Ajá kò kpa adìẹ  
 dog neg kill chicken  
 The dog didn't kill the chicken.  
 => Ajá ni kò kpa adìẹ  
 dog Topic neg kill chicken  
 It's the dog that didn't kill the chicken.
- (iii) Ajá yò kpa adìẹ  
 dog future kill chicken  
 The dog will kill the chicken.  
 => Ajá ni yò kpa adìẹ  
 dog Topic future kill chicken  
 It's the dog that will kill the chicken.

That this replacement by ó is not an agreement process is illustrated by the following examples.

- |         |                 |                            |
|---------|-----------------|----------------------------|
| (8) (i) | èmi ni ó lọ     | 'It's I that went.'        |
|         | èmi ni mo lọ    |                            |
| (ii)    | ìwọ ni ó lọ     | 'It's you (sg) that went.' |
|         | ìwọ ni o lọ     |                            |
| (iii)   | àwa ni ó lọ     | 'It's we that went.'       |
|         | àwa ni a lọ     |                            |
|         | *àwa ni wọn lọ  |                            |
| (iv)    | ẹyin ni ó lọ    | 'It's you (pl) that went.' |
|         | ẹyin ni ẹ lọ    |                            |
|         | *ẹyin ni wọn lọ |                            |
| (v)     | àwọn ni ó lọ    | 'It's they that went.'     |
|         | àwọn ni wọn lọ  |                            |

In each example, the first member of the pair has ó replacing the topicalized pronoun, and the second has the corresponding subject pronoun as a replacive. Thus agreement in topicalization must be considered optional. The examples with agreement are also considered slightly more emphatic

than those with ó. The third example in (8iii) and (8iv) is given to show that ó does not mark number agreement, since the plural examples are ungrammatical with just number agreement and no person agreement. This is further evidence, in this case of a syntactic sort, that ó is not a third person singular subject pronoun. If it were, then it would be necessary to claim that the third singular can agree with any other person/number combination, a claim which receives no support from any other area of Yoruba syntax.

The agreement phenomenon sketched in (5i) requires two rules. First, there is a rule of Subject Concord, which copies the appropriate concord morpheme onto the verb, and then there is a rule of Pronominal Subject NP Deletion, which deletes the Subject NP just in case it is a pronoun. Yoruba also has a rule of Equi-NP Deletion which applies in certain complement structures. The sort of complement involved here has been the subject of considerable recent discussion (Bamgbose 1971 and Awobuluyi 1970). I will illustrate it with the following paradigm, using the desiderative verb fẹ 'want'. Complements of desiderative verbs are introduced by the complementizer kí.

- |     |       |                |                                                  |
|-----|-------|----------------|--------------------------------------------------|
| (9) | (i)   | mo fẹ́ fẹ́ lẹ  | 'I want to go.'                                  |
|     |       | mo fẹ́ kí o lẹ | 'I want that you go.'                            |
|     |       | mo fẹ́ kí ó lẹ | 'I want that he go.'                             |
|     | (ii)  | o fẹ́ kí mo lẹ | 'I want that I go.'                              |
|     |       | o fẹ́ fẹ́ lẹ   | 'You want to go.'                                |
|     |       | o fẹ́ kí ó lẹ  | 'You want that he go.'                           |
|     | (iii) | ó fẹ́ kí mo lẹ | 'He wants that I go.'                            |
|     |       | ó fẹ́ kí o lẹ  | 'He wants that you go.'                          |
|     |       | ó fẹ́ fẹ́ lẹ   | 'He wants to go.'                                |
|     |       | ó fẹ́ kí ó lẹ  | 'He <sub>i</sub> wants that he <sub>j</sub> go.' |

In each of the examples, the construction is different where the higher and lower subjects are coreferential. The difference involves three things. First, the complement lacks a subject pronoun; second, the complementizer



ki is absent; and third, the vowel of the verb is lengthened.<sup>5</sup> In (9iii) the relationship of coreferentiality conditions to Equi-NP is further illustrated by the fact that subject concord has applied just in that case where the two underlying third singular pronouns are not coreferential.

In complement types in which Equi-NP does not apply, coreference is marked in another way. One complement type which does not permit Equi-NP occurs with verbs of saying. The complementizer is kpé.

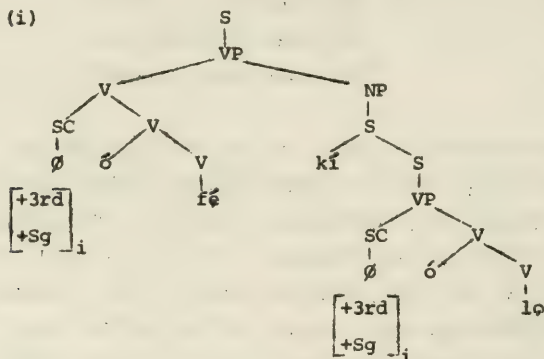
(10) (i)	mo sɔ kpé mo lɔ	'I said that I went.'
	mo sɔ kpé o lɔ	'I said that you went.'
	mo sɔ kpé ɔ lɔ	'I said that he went.'
(ii)	o sɔ kpé mo lɔ	'You said that I went.'
	o sɔ kpé o lɔ	'You said that you went.'
	o sɔ kpé ɔ lɔ	'You said that he went.'
(iii)	ɔ sɔ kpé mo lɔ	'He said that I went.'
	ɔ sɔ kpé o lɔ	'He said that you went.'
	ɔ sɔ kpé ɔ lɔ	'He <sub>i</sub> said that he <sub>j</sub> went.'
	ɔ sɔ kpé òun lɔ	'He <sub>i</sub> said that he <sub>i</sub> went.'

In this case, not only does Equi-NP not apply, but in the third person singular the subject deletion rule, which normally applies after agreement, also fails to apply, or, perhaps more accurately, is blocked from applying by the fact of coreference with the higher subject. In Yoruba, then, the absence of a subject NP may be due to at least two rules. After agreement has applied, subject NP deletion may apply just if the subject NP is a pronoun. In a desiderative complement structure Equi-NP Deletion removes the subject NP under the condition of coreference with the higher subject NP. The ordering of these rules is as in (11).

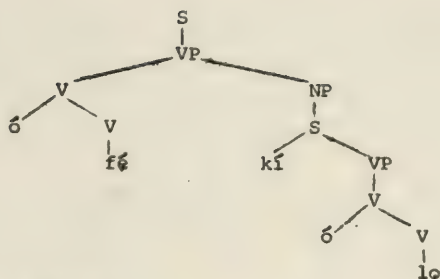
- (11)      Equi-NP Deletion  
             Subject Concord  
             Pronominal Subject NP Deletion

The ordering of Subject Concord before Subject Deletion is an intrinsic ordering and will be left at that. The ordering of Equi-NP Deletion before the agreement rules, on the other hand, is supported by a number of arguments. The first of these involves the structure on which Equi-NP operates, namely, coreferential NP's. If Equi-NP were ordered after Subject Deletion, the structural description would have to refer to referential identity between SC's or SC's and NP's, as well as between NP's, since at that point some underlying NP's would have been deleted, leaving behind only the SC. With the third person singular subject prefixes in particular this ordering would also predict certain non-occurring sentences. Since this pronoun has a zero morpheme as its subject concord, Equi-NP would apply to the structure in (12i) to produce the superficially unchanged and ungrammatical (12ii). The Subject NP's of (12) have already been deleted by Pronominal Subject NP Deletion.

(12) (i)



(ii)



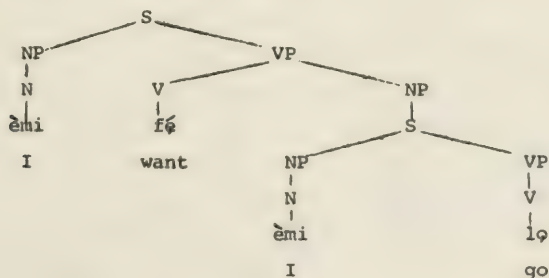
(iii) \* o fɛ kɪ o lɔ

He<sub>i</sub> wanted that he<sub>i</sub> go.

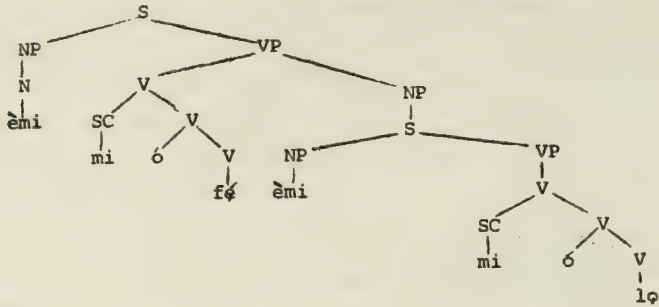
The surface sentence given in (12iii) is a possible grammatical sentence, but not with the meaning that the subjects of the higher and lower sentences are coreferential. Thus Equi-NP cannot be ordered after Pronominal Subject NP Deletion.

The ordering of Equi-NP immediately after Subject Concord can be shown to be incorrect for similar reasons. In a sentence with an overt SC, that is, a sentence where the subject NP is anything other than third person singular, this ordering would produce the following derivation and ungrammatical sentence. The phrase marker in (13i) is as close to the underlying structure as it is necessary to get for this discussion.

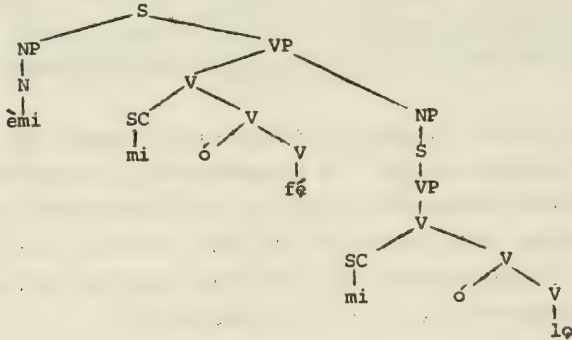
(13) (i) Near Underlying Structure



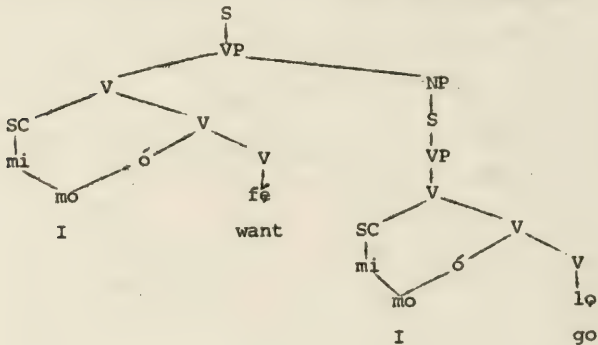
## (ii) After Subject Concord



## (iii) After Equi-NP Deletion



## (iv) After Pronominal Subject NP Deletion



The resulting surface structure (14i), with or without complementizer placement, is ungrammatical. The correct surface structure in (14ii) is not predicted by the ordering of Equi-NP after Subject Concord and this ordering must therefore be rejected.

- (14) (i) \*mo fɛ́ (kí) mo lɔ  
           I want (that) I go.  
       (ii) mo fɛ́ lɔ  
           I want (to) go.

The ordering proposed in (11), with Equi-NP Deletion before the agreement rules, will account for (14ii), as well as for the sentences in (9) and (10). Since Equi-NP applies in desiderative complements, but not in reported speech, sentences like those in (9) and (14) will have lost the subject NP of the embedded sentence by Equi-NP in just those cases where coreferentiality exists. As a result, the agreement rules will fail to operate in just these embedded sentences. This analysis does not, however, account for the behavior of third person singular pronominal subject NP's in sentences like (15).

- (15) (i) ó sɔ́ kpé ó lɔ  
           He<sub>i</sub> said that he<sub>j</sub> went.  
       (ii) ó sɔ́ kpé òun lɔ  
           He<sub>i</sub> said that he<sub>i</sub> went.

This distinction cannot be due to Equi-NP, since, as the sentences in (10) show, if some other pronoun is involved the agreement rules will still apply, even if the higher and lower subjects are coreferential.

To account for the occurrence of òun in (10iii) and (15ii) we need some other mechanism, such as a condition on Pronominal Subject NP Deletion blocking it from applying if the NP involved meets the following conditions.



- (16) (i) The Pronominal Subject NP is third person singular.  
 (ii) The Pronominal Subject NP is in an embedded sentence not introduced by kí.  
 (iii) The Pronominal Subject NP is coreferential with the Subject NP of the matrix sentence.

If these three conditions are met, then agreement is blocked, and the subject NP is kept. The three rules discussed above, and the conditions stated in (16) account for the behavior of both embedded and matrix pronominal subjects.<sup>6</sup>

#### The Relative Clause

In Yoruba, as in English, the relative clause follows the head noun. The clause is introduced by the invariant marker tí, as in the following examples. The relative clauses are underlined.

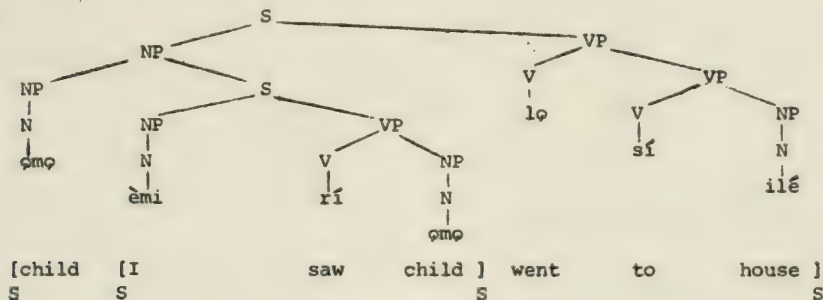
- (17) (i) omọ tí mo rí lẹ sí ilé  
 child Rel I saw went to house  
 The child whom I saw went home.  
 (ii) omọ tí ó rí mi lẹ sí ilé  
 child Rel SC saw me went to house  
 The child who saw me went home.  
 (iii) omọ tí mo rí ìwě rẹ lẹ sí ilé  
 child Rel I saw book his went to house  
 The child whose book I saw went home.

In (17i) the relativized NP is the underlying object of the embedded S and is absent in the surface structure. In (17ii) the relativized NP is the underlying subject of the embedded S and again is absent in the surface structure. In (17iii) the relativized NP is a possessive in the underlying structure, and in the surface structure it is retained as a pronoun.

These observations lend themselves to two interpretations of the

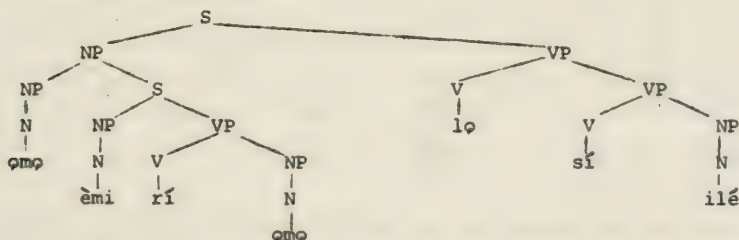
derivation of Yoruba relative clauses. For both interpretations I will posit an underlying NP + S analysis, giving us underlying phrase structure trees like the following.

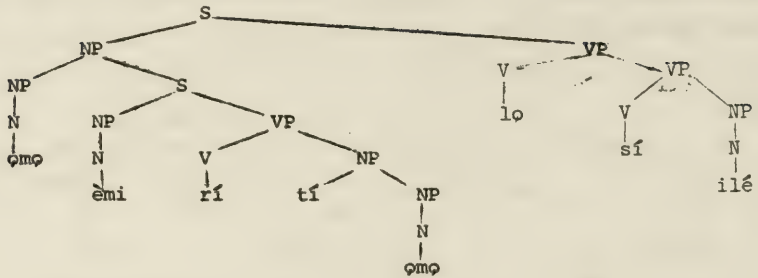
- (18)



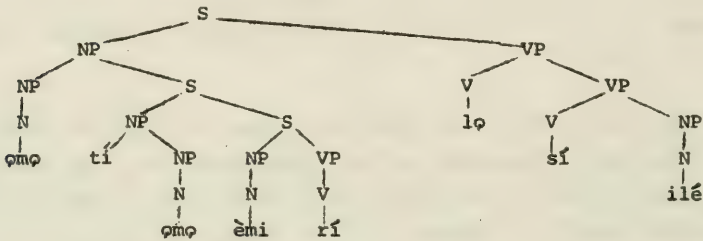
On one interpretation, one could claim that the relative marker ti, like WH in English, is attached to the coreferential NP of the relative clause. Then that NP is incorporated into the relative marker, the resulting relativized NP is fronted, and the embedded coreferent is deleted. This derivation is illustrated in (19).

- (19) (i) Underlying Structure

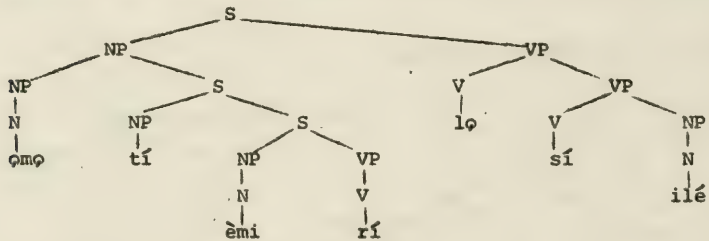


(ii) t<sub>i</sub>-Insertion:

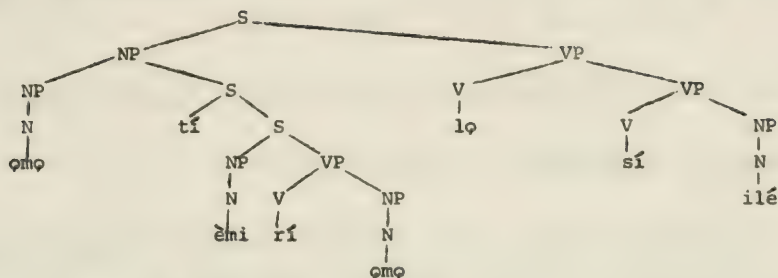
## (iii) Relative Movement



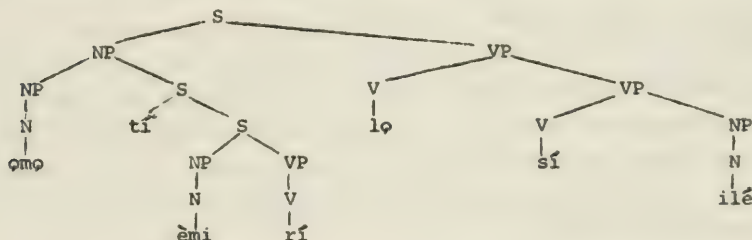
## (iv) Relative NP Incorporation



On the second interpretation, the deletion analysis, the relative marker is attached to the embedded S, not to the lower NP. Then the lower NP is deleted, not moved. This is illustrated in (20).

(20) (i) tí-Insertion

## (ii) Relative NP Deletion



The deletion analysis is superior for at least three reasons. First, the relative marker is invariant, and so there is no reason to believe that any of the agreement phenomena of languages like English or Latin have taken place. Second, there is no independent evidence for the claim of the movement analysis that tí is an NP. Third, if relativization involves movement, then some explanation must be found for the failure of the possessive or the entire possessed NP in (17iii) to move. In English, where movement in relative clauses is well attested, the entire NP containing the relativized NP is moved, giving a sentence like (21).

(21) The child whose book I saw went home.

If this sort of movement were found in Yoruba, then the following sentence, rather than (17iii), would be grammatical.

(22) \*[ ɔmpɔ [ ìwé tɪ [ mo rɪ ] ] lɔ sɪ ilé ]  
           <sup>S</sup>child <sup>S</sup>book Rel <sup>S</sup>I saw <sup>S</sup><sup>S</sup>went to house.

Since (22) is ungrammatical, the movement analysis must be rejected.

#### Constraints on Movement and Deletion Rules

In the first section of this paper I developed an analysis of the pronominal system of Yoruba. Some features of this system, such as the zero form of the third person singular subject concord and the conditions under which the agreement rules are blocked, play an important role in an understanding of movement and deletion processes and restrictions on these processes in Yoruba. In this section I will discuss the applicability of Ross' constraints (Ross 1967) to Yoruba and some modifications of the theory of constraints which can be motivated on the basis of Yoruba. I will begin by briefly outlining the Ross' constraints as they were originally developed for English.

#### Ross' Constraints on Movement Over Variables

In his very important study Constraints on Variables in Syntax (1967), Ross motivates a set of constraints on rules which move NP over an essential variable. One of these, the Coordinate Structure Constraint, blocks the movement of NP out of a pair of structures conjoined by and, but, and or.<sup>7</sup> Consequently the sentences in (23i) are fully grammatical, but those in (23ii) are ungrammatical.

(23) (i) What did you eat with your wild rice?

This is the roast duck which I ate with the wild rice.

(ii) \*What did you eat roast duck and ?

\*Here is the typewriter which Will writes plays and I had repaired yesterday.



A grammatical sentence will result if, as in (24) the same NP is moved out of both conjuncts.

(24) Tom caught the fish which Sam cleaned and we all ate.

The constraint, as Ross states it (1967:161), is as follows.

(25) The Coordinate Structure Constraint

In a coordinate structure, no conjunct may be moved, nor may any element contained in a conjunct be moved out of that conjunct.

Another of these constraints is one which blocks movement of elements out of certain embedded sentences. Thus the sentences in (26i) are grammatical while those in (26ii) are not.

(26) (i) The man whom the prosecutor charged

[ [ that the defendant had murdered ] ] turned up alive.  
NP S S NP

Who does the book say [ [ the steam engine was invented by ] ] ?  
NP S SNP

(ii) \*The man whom the prosecutor filed [ [ the charge ] [ that the  
NP N N S  
defendant had murdered ] ] turned up alive.  
S NP

\*Who do you know [ [ a man ] [ who hates ] ] ?  
NP NP NP S S NP

Ross gives the following statement of this constraint (1967:127).

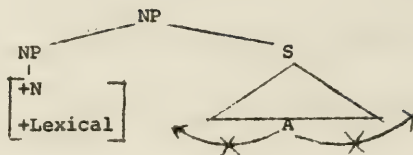
(27) The Complex NP Constraint

No element contained in a sentence dominated by a noun phrase with a lexical head noun may be moved out of that noun phrase by a transformation.

He gives the following diagram for (27) (1967:127), where A stands for any

constituent.

(28)



A third general principle governing movement rules is what he calls the 'Pied Piping Convention', stated as follows (1967:206).

(29) The Pied Piping Convention

Any transformation which is stated in such a way as to effect the reordering of some specified node NP, where this node is preceded and followed by variables in the structure index of the rule, may apply to this NP or to any non-coordinate NP which dominates it, as long as there are no occurrences of any coordinate node, nor of the node S, on the branch connecting the higher node and the specified node.

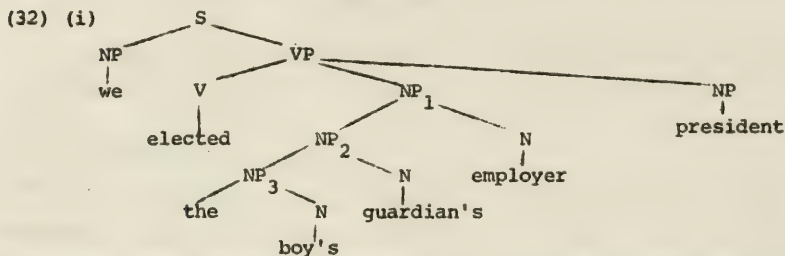
An example of the Pied Piping Convention is the following (Ross, 1967: 197-8).



### (31) The Left Branch Condition

No NP which is the leftmost constituent of a larger NP can be reordered out of this NP by a transformational rule.

He gives the following examples (1967:208) to illustrate (31).



Another constraint is proposed to account for the ungrammaticality of sentences like (33), in which some element has been moved out of a sentence embedded in subject position.

- (33) (i) That the hunter missed the bird was due to a sudden outcry.  
(ii)\*[ The bird [which [ that the hunter missed ] was due to a  
NP S S S  
sudden outcry ] ] was a grouse.  
S NP

This constraint Ross states as follows (1967:243).

(34) The Sentential Subject Constraint

No element dominated by an S may be moved out of that S if that node S is immediately dominated by an NP which itself is immediately dominated by S.

An important feature of sentential subjects is the fact that they can usually be extraposed. Thus the sentence in (33i) can be converted into the sentence in (35i). Since the clause [ that the hunter missed the bird ] is no longer a sentential subject, <sup>S</sup>relativization as in (33ii) renders <sup>S</sup>the awkward but grammatical (35ii).

- (35) (i) It was due to a sudden outcry that the hunter missed the bird.  
 (ii) The bird which it was due to a sudden outcry that the hunter missed was a grouse.

Ross claims that the Coordinate Structure Constraint and the Complex NP Constraint are universal and that the Left Branch Condition and the Sentential Subject Constraint are very nearly universal, violations occurring in only a few languages and probably under carefully controlled conditions.

## Ross' Constraints in Yoruba

The Coordinate Structure Constraint is perhaps the easiest of Ross' constraints to illustrate in a particular language. Yoruba coordination is of two types, depending on the constituents being conjoined. NP's are conjoined by àti, as shown below.

## (36) Adé àti wálé ñ saré

Ade and Wale are running.

Mo ra ilá àti ẹfẹ

I bought okra and greens.



Sentences are conjoined by what is very likely a verbal element sì, meaning something like 'and then'. This word frequently has the effect of imposing a temporal or logical order on the two conjuncts.

(37) Adé lọ sí ọjà, ó sì ra ẹfẹ

Adé went to the market, he then bought greens.

Although it is questionable whether sì is in fact a conjunction, and therefore whether conjoined sentences are permitted at all in Yoruba surface structures, sentences like (37) seem to be subject to the Coordinate Structure Constraint, as the topicalized example in (38) shows.

(38) (i) ẹfẹ ni Adé rà

greens TOPIC Ade bought

It's greens Ade bought.

(ii) \*ẹfẹ ni Adé lọ sí ọjà, ó sì rà

\*It's greens Ade went to the market and then he bought.

Because of the questionable status of sì, I will concentrate only on conjoined NP's and the conjunction àti.<sup>8</sup>

Perhaps the most obvious movement rule in Yoruba is that involved in topicalization. As shown in (38), topicalization involves the preposing of the element to be topicalized and the insertion of the particle ni between it and the rest of the sentence. Topicalization is also involved in question formation, the question word being topicalized. If the topicalized element is moved out of a coordinate structure, the sentence is ungrammatical, as in (39).

(39) (i) \*ìwọ ni mo rí àti Adé

\*It's you I saw and Adé.

(ii) \*ta ni ọlọkpá àti rí olè ní inú ilé mi

\*Who did the policeman and see the thief in my house?

Sentences like those in (39) become marginally grammatical if the topicalized element is a noun, the third singular pronoun, or a question word, if it is the leftmost member of the conjoined structure, and if the pronoun òun 'he' is left behind. Even then, the sentence is grammatical only if the antecedent of òun is human. The following sentences meeting these conditions are marginally grammatical.<sup>9</sup>

- (40) (i) ?Adé ni mo rí òun àti àbúrò mi.  
It's Adé that I saw him and my younger sibling.
- (ii) ?Òrẹ̀ mi ni òun àti ìyàwó rẹ̀ wá kí mi  
It's my friend that he and his wife came to greet me.
- (iii) ?Ta ni òun àti ìwọ̀ lẹ̀ sí Ìbàdàn ní ànà?  
Who is it that he and you went to Ibadan yesterday?

Sentences like these are definitely ungrammatical if any of the conditions mentioned above are violated. Thus none of the sentences in (41) is even marginally acceptable.

- (41) (i) \*Adé ni mo rí àbúrò mi àti òun  
It's Ade that I saw my younger sibling and him.
- (ii) \*Òrẹ̀ mi ni ìyàwó rẹ̀ àti òun wá kí mi  
It's my friend that his wife and he came to greet me.
- (iii) \*kí ni 'o ra òun àti ẹ̀fẹ̀ ní ànà  
What did you buy it and greens yesterday?

In a relative clause, relativization in a coordinate structure is permitted, but the pronoun òun must replace the relativized noun, and the pronoun must be the first element of the conjunct. Also, the antecedent of òun must be human.

- (42) (i)  $\phi\phi\phi$  nā tí mo rí òun àti Adé wá sí ibí  
 The child Rel I saw him and Ade came here.  
 \* $\phi\phi\phi$  nā tí mo rí Adé àti òun wá sí ibí  
 The child Rel I saw Ade and him came here.
- (ii)  $\phi\phi\phi$  nā tí òun àti Adé lẹ ilé wà ní ibí  
 The child Rel he and Ade went home is here.  
 \* $\phi\phi\phi$  nā tí Adé àti òun lẹ ilé wà ní ibí  
 The child Rel Ade and he went home is here.
- (iii) \* $\phi\phi\phi$  tí òun àti ilá dùn wọ́n jù  
 greens Rel it and okra taste good are very costly.

If the embedded coreferent is deleted, as is normal for subjects and objects in Yoruba relative clauses, then the following ungrammatical forms corresponding to (42i and ii) will result.

- (43) (i) \* $\phi\phi\phi$  nā tí mo rí àti Adé wá sí ibí  
 The child whom I saw and Ade came here.
- (ii) \* $\phi\phi\phi$  nā tí àti Adé lẹ ilé wà ní ibí  
 The child who and Ade went home is here.

The grammaticality of the first member of each pair in (42) may be related to the generalization captured above in (16), where it was noted that in non-desiderative complements the pronoun òun was kept and agreement was blocked if òun was coreferential with some higher NP. In relative clauses, the embedded coreferent is normally deleted, but where the antecedent is human and the embedded coreferent is the first element of a conjunct nominalization occurs instead of deletion. In just these cases, as shown in (43) deletion would result in an ungrammatical sentence, just as movement would in English. Thus the Coordinate Structure Constraint must apply both to the movement phenomena of topicalization and to the deletion phenomena of relativization.

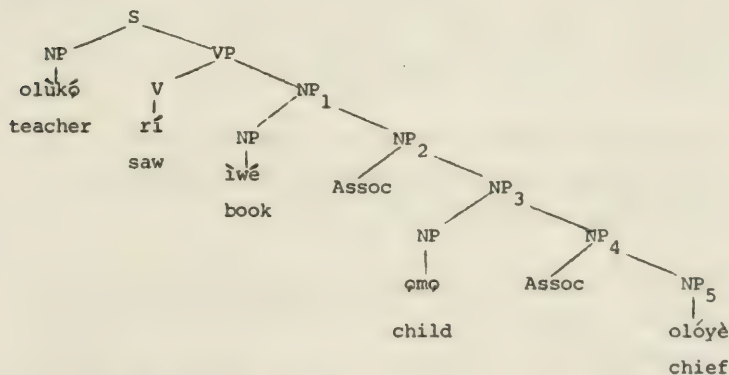
The possessive in Yoruba is a right-branching construction and is superficially subject to the Pied Piping Convention. Yoruba linguists

distinguish emphatic possessive, using the particle ti to link the possessed noun with the possessor and an unemphatic construction which differs only in that the particle ti is absent. Both constructions, as illustrated in (44) and (45) are right-branching and contain what has been called an Associative Particle (Assoc) (Welmers 1964 and Courtenay 1969), a mid tone which occurs immediately after the possessed noun.<sup>10</sup>

- (44) (i) olùkò rí ìwé-omò  
 teacher saw book Assoc child  
 The teacher saw the book of the child.
- (ii) olùkò rí ìwé-ti omò  
 teacher saw book Assoc Emph child  
 The teacher saw the child's book.

A longer possessive construction, illustrating its right branching nature, is given in (45i). The possible English glosses are given in (45ii).

- (45) (i)



- (ii) The teacher saw { the chief's child's book.  
 the book of the chief's child.  
 the book of the child of the chief.

Relativization and Topicalization are possible only on NP<sub>1</sub>, NP<sub>3</sub>, or

NP<sub>5</sub>.<sup>11</sup> If the NP involved is on a right branch, a pronoun is left behind.

The relativized and topicalized variants are given below.

(46) Relativization in right-branching constructions.

- (i) [ olóyè ] tí mo rí ìwé-om̩ [ r̩ ] wà ní ibí  
NP<sub>5</sub> NP<sub>5</sub>

chief Rel I saw book Assoc child Assoc his is here

The chief whose child's book I saw is here.

- (ii) [ om̩-olóyè ] tí mo rí ìwé [ r̩ ] wà ní ibí  
NP<sub>3</sub> NP<sub>3</sub>

child Assoc chief Rel I saw book Assoc his is here

The child of the chief whose book I saw is here.

- (iii) [ ìwé-om̩-olóyè ] tí mo rí wà ní ibí  
NP<sub>1</sub>

book Assoc child Assoc chief Rel I saw is here

The chief's child's book which I saw is here.

(47) Topicalization in right-branching constructions.<sup>12</sup>

- (i) [ olóyè ] ni olùk̩ rí ìwé-om̩ [ r̩ ]  
NP<sub>5</sub> NP<sub>5</sub>

chief Topic teacher saw book Assoc child Assoc his

It's the chief that the teacher saw his child's book.

- (ii) [ om̩-olóyè ] ni olùk̩ rí ìwé [ r̩ ]  
NP<sub>3</sub> NP<sub>3</sub>

child Assoc chief Topic teacher saw book Assoc his

It's the chief's child that the teacher saw his book.

- (iii) [ ìwé-om̩-olóyè ] ni olùk̩ rí  
NP<sub>1</sub>

book Assoc child Assoc chief Topic teacher saw

It's the chief's child's book that the teacher saw.

In each case where the NP to be moved or deleted is on the right branch of some NP, it is pronominalized and the resulting sentence is grammatical.



If the NP to be moved or deleted is a highest NP, as in (46iii) and (47iii), no pronominalization occurs. Rather the NP is deleted.

The behavior of these right-branching constructions is analogous to the Left Branch Condition Ross states for English (1967:207). The Pied Piping Convention shows up in Yoruba as a constraint on movement or deletion from the right branch of an NP. The following constraint will account for the syntactic behavior observed in (44-47).

(48) The Right Branch Constraint<sup>13</sup>

No NP which is the rightmost NP of some larger NP may be moved out of or deleted from the larger NP.

The behavior of complex NP structures under relativization and topicalization presents a slightly different sort of problem.<sup>14</sup> In example (49) there is no variation in grammaticality, whatever pronoun form is used. They are all equally ungrammatical.

(49) \**ońjẹ tí mo mọ̀ ọ̀kúnrin*

food<sub>i</sub> Rel I know man<sub>j</sub>

tí ọ̀ fi { í } fún ọ̀mọ̀ nà kò dùn  
                   { ọ̀dún }  
                   { ∅ }

Rel he<sub>j</sub> took { it (dependent) } gave child the not sweet  
                                   { it (independent) }  
                                   { ∅ }<sub>i</sub>

\*The food which I know the man who gave { it }  
                                                           { ∅ }

to the child does not taste good.

The ungrammaticality of (49) could be attributed to the fact, mentioned above, that *ọ̀dún* requires a human antecedent. That this is not the only reason for (49) being bad is shown by the fact that the sentence is

equally bad if the dependent pronoun form is used or if the NP is deleted, as we would expect in a relative clause. Further evidence that the problem lies in the structure and not in the form of the pronoun used comes from the following sentence, where the antecedent of *oun* is human.

- (50) \*Okunrin tí mo gbé ìròhìn tí ó sọ kpé  
 man Rel I hear news Rel say that  
 àwon ọlókpa mú { òun } jí owó kpúkpa  
 { u }  
 { ø }  
 pl. police arrest { him (dep) } steal money much  
 { him (indep) }  
 { ø }  
 \*The man whom I heard the news that the police arrested { him }  
 { ø }  
 stole a lot of money.

Deletion and movement out of a sentential subject in Yoruba is subject to much the same restrictions as in English. I will illustrate this with the following sentence.<sup>15</sup>

- (51) [ [kpé obìnrin nà ñse ɔ́ŋjẹ́ ] ] wù mí  
NP S S NP  
that woman the is-cooking food pleases me

As the sentences in (52) show, no NP can be moved out of the embedded sentence. The grammaticality of these sentences is not improved by replacing the moved NP by the pronoun *ɔ̃n*.

- (52) (i) \* $\left[ \begin{array}{c} \text{obinrin} \\ \text{S} \end{array} \right] \left[ \begin{array}{c} \text{nā} \\ \text{S} \end{array} \right] \left[ \begin{array}{c} \text{ni} \\ \text{NP} \end{array} \right] \left[ \begin{array}{c} \left\{ \begin{array}{c} \text{kpé} \quad \left\{ \begin{array}{c} \text{ó} \\ \text{dun} \end{array} \right\} \end{array} \right\} \\ \text{S} \end{array} \right] \left[ \begin{array}{c} \text{nse} \\ \text{SNP} \end{array} \right] \left[ \begin{array}{c} \text{onjẹ} \\ \text{S} \end{array} \right] \left[ \begin{array}{c} \text{wù} \\ \text{S} \end{array} \right] \left[ \begin{array}{c} \text{mí} \\ \text{S} \end{array} \right] \left[ \begin{array}{c} \text{}} \\ \text{S} \end{array} \right]$
- \*It's the woman that that she is cooking food pleases me.

- (ii) \* $\left[ \begin{array}{c} \text{[} \text{[} \text{[} \text{kpé obìnrin nā} \text{ n̄sè} \left\{ \begin{array}{c} \emptyset \\ \text{é} \\ \text{òun} \end{array} \right\} \text{]} \text{]} \text{ wù mí } \text{]} \text{]} \\ \text{S} \quad \text{S NP S} \quad \text{S NP} \quad \text{S S} \end{array} \right.$

\*It's the food that that the woman is cooking pleases me.

Similarly, if (51) is embedded as a relative clause on either obìnrin 'woman' or on̄jẹ, the resulting sentence will be ungrammatical. Again the sentence is not improved if the embedded coreferent is replaced by a pronoun instead of being deleted.

- (53) (i) \* $\left[ \begin{array}{c} \text{[} \text{[} \text{[} \text{obìnrin nā} \text{ [} \text{tí} \text{ [} \text{[} \text{kpé} \left\{ \begin{array}{c} \text{ó} \\ \text{òun} \end{array} \right\} \text{ n̄sè on̄jẹ} \text{]} \text{]} \text{ wù mí } \text{]} \text{]} \\ \text{NP} \quad \text{S} \quad \text{NP S} \quad \text{S NP} \quad \text{S NP} \end{array} \right.$

woman the Rel that she is-cooking food pleases me  
ni iyàwó ègbón mi  
is wife of senior sibling my.

\*The woman who that (she) is cooking food pleases me is my older brother's wife.

- (ii) \* $\left[ \begin{array}{c} \text{[} \text{[} \text{[} \text{àkàrà àtì} \text{ èkọ} \text{ ni} \text{ [} \text{on̄jẹ} \text{ [} \text{[} \text{[} \text{kpé obìnrin nā} \\ \text{NP} \quad \text{NP S} \quad \text{NP S} \end{array} \right.$   
beancakes and porridge is food Rel that woman the  
n̄sè  $\left\{ \begin{array}{c} \emptyset \\ \text{é} \\ \text{òun} \end{array} \right\}$  S NP S NP

is-cooking pleases me.

\*Beancakes and porridge is the food which that the woman is cooking (it) pleases me.

Just as in English, however, if the subject clause is extraposed, the sentences (55) corresponding to (52) and (53) are grammatical. The basic extraposed form is given in (54).

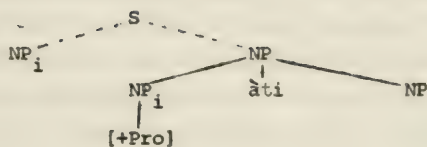
- (54)  $\left[ \begin{array}{c} \text{[} \text{[} \text{[} \text{ó wù mí} \text{ [} \text{kpé obìnrin nā} \text{ n̄sè on̄jẹ} \text{]} \text{]} \\ \text{S} \quad \text{S} \end{array} \right.$

It pleases me that the woman is cooking food.

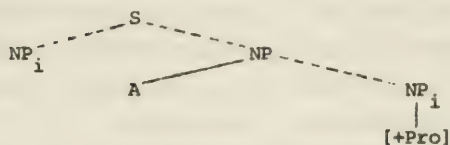


straint (56ii).

(56 (i)



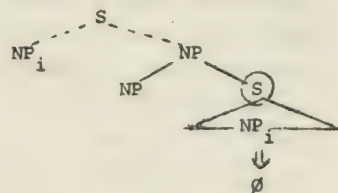
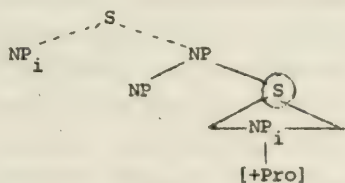
(ii)



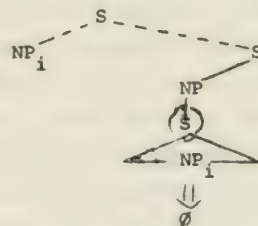
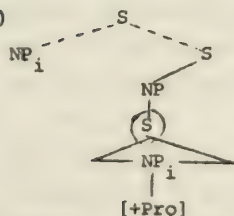
Corresponding structures in which the pronominalized NP has been deleted are ungrammatical.

Constraints of the second type permit neither pronominalization nor deletion, and so the following output structures for configurations which are subject to the Complex NP Constraint (57i) or the Sentential Subject Constraint (57ii) are ungrammatical.

(57) (i)



(ii)



The obvious difference between (56) and (57) is the presence of the



circled S node which intervenes in (57) between the antecedent and the pronominalized or deleted NP. In order for pronominalization to be blocked by a constraint, it apparently must be necessary that there be an essential S in the formulation of the constraint. Thus the Complex NP and Sentential Subject Constraints cannot be stated without referring to an embedded S node, an essential S. The Coordinate Structure and Right Branching Constraints, on the other hand, ignore the presence of an intervening S and no S need be mentioned in the formulation of these constraints. I will refer to constraints of the former type as essential S constraints and of the latter type as non-essential S constraints.

Ross (1967:426-428) divides reordering rules into chopping and copying rules. Chopping rules consist of copying and replacement of the copied element by zero or some element not identical to the copied element. In a copying rule the element which has been copied also remains behind. Ross then makes the claim that 'chopping rules are subject to the constraints...; copying rules are not.' Interpreted in this way, Ross' constraints are not applicable to relative clause formation in Yoruba, since, as I showed earlier, relative clauses involve only deletion and not copying. Yet certain ungrammaticalities result from relative clause formation in just those cases where a reordering constraint would have been violated if reordering were the relativization process in Yoruba. The question, then, is just what processes are subject to Ross' constraints in Yoruba. In topicalization out of a structure which is subject to a non-essential S constraint, copying and pronominalization are permitted, but deletion is blocked. In topicalization out of a structure subject to an essential S constraint, deletion, pronominalization, and copying are all blocked. Since copying must apply before pronominalization or deletion can apply, it would be sufficient to say that copying out of an essential S configuration is blocked, just as in English. This would block both pronominalization and deletion, since their structural descriptions would not be met. However, in relativization into a non-essential S configuration, it is once again the case that pronominalization is permitted but deletion is blocked. In relativization into an essential S configuration, pro-

nominalization is blocked and therefore deletion will also be blocked. But now the constraints cannot be on copying. Rather they behave as if they were constraints on pronominalization.

We are then faced with the question of what Ross' constraints actually do constrain in Yoruba. A plausible solution could be developed along the following lines.<sup>16</sup> It can be shown easily that Yoruba does not permit sentences like those in (58), where whether or not the structural description for pronominalization has been created by copying, pronominalization has failed to apply.

- (58) (i) \**àkàrà ni Dàda jẹ àkàrà*  
           beancakes Topic Dada ate beancakes  
           \*It's beancakes that Dada ate beancakes.
- (ii) \**Ọlá jẹ àkàrà tí baba-Ọlá ra àkàrà*  
           Ọlá ate beancakes Rel father of Ọlá bought beancakes  
           \*Ọlá ate the beancakes which Ọlá's father bought the beancakes.

The fact that pronominalization and/or deletion are obligatory in sentences of this sort means, in effect, that sentences like (58) which may show up as intermediate derived structures in the derivation of the topicalized and relativized sentences in (59) are blocked from occurring as grammatical surface structures.

- (59) (i) *àkàrà ni Dàda jẹ*  
           It's beancakes that Dada ate.
- (ii) *Ọlá jẹ àkàrà tí baba-rẹ̀ rà*  
           Ọlá ate the beancakes which his father bought.

In those cases where deletion is blocked by a non-essential S constraint no real problem exists. Non-essential S constraints simply block a smaller set of sentences than essential S constraints. In those cases where pronominalization is blocked by an essential S constraint the ungrammaticality of a surface output containing a pronoun can be accounted for by the fact that these structures block pronominalization. If pronominalization has

not occurred, as in (58), the sentence will be ungrammatical because pronominalization has not applied where it was obligatory, even though its application would have violated an essential S constraint. Thus a sentence which has undergone copying or which meets for some other reason the structural description of pronominalization must undergo pronominalization. If the sentence contains a configuration defined by a non-essential S constraint, deletion will be blocked, but the pronominalized version will be grammatical. If it contains a configuration defined by an essential S constraint, pronominalization will be blocked, and in this case the non-pronominalized form will also be ungrammatical because of its failure to undergo an obligatory rule.

The distinction between essential S and non-essential S constraints introduces the notion that some constraints are stronger than others. That is, the set of conditions under which non-essential S constraints can be violated contains as a proper subset the set of conditions under which the essential S constraints can be violated. Thus the essential S constraints block a larger set of sentences and are more powerful. This notion becomes quite natural when one considers that the effect of this ranking of constraints in Yoruba is to make NP's contained in embedded sentences less accessible to reordering, pronominalization and deletion than NP's contained in islands whose description does not include an essential S.

## FOOTNOTES

<sup>1</sup> I would like to thank Jerry Morgan and Peter Cole for their very helpful comments, and Oláyíwọlá Awóyálé and Olúṣọlá Ajólóre for their invaluable assistance with the data. All mistakes and weaknesses in the paper are, of course, my own responsibility. With the exception of the following special symbols, all symbols have their IPA values: ʂ is a voiceless alveopalatal fricative, ɛ and ɔ are respectively front and back open mid vowels, and the diacritics ́, ̄, and ̀ refer to high, mid, and low tones respectively.

<sup>2</sup> The situation is not quite this simple. Bamgboṣe (1966) and Awobuluyi (1967) give a long list of modals and other aspectual and adverbial elements which can occur between the vowel o and the main verb. However, none of these will cause o to come before the negative or future morphemes, and so my distributional claim stands, subject to the modification that the element immediately to the right of o requires further specification.

<sup>3</sup> The morphology of the Yoruba tense/aspect system is at least as complex as that of the pronoun system, and any attempt at synchronic regularization is probably doomed from the outset. But even given this hedge, it may be possible to analyze the future marker yò in the following. Since short falling tones, or high-low sequences on single vowels, are very rare in Yoruba, yò may lend itself to an analysis as í + ò. The vowel í may be identical to the í of the habitual and future negator kíí, and the negative future form kí yò may be analyzable as kíí ò Verb, becoming kí yò 'Verb, with only the downstep remaining from the low tone. Whether the high tone of the í of kíí and yò is identifiable as the same high tone elsewhere used as a subject marker is doubtful.

<sup>4</sup> I am assuming that the basic syntactic process involved in clitic attachment is Chomsky-adjunction, as shown. This need not be so, but in any case, it will not effect the argument in any way.

<sup>5</sup> The lengthening of this vowel is not directly relevant to this paper. However, it is found in all cases where Equi-NP deletion has applied to remove an embedded subject. Also it is not simply a lengthened vowel; it always takes a high tone. This may be an infinitive marker, as suggested by Bamgboṣe (1971).

<sup>6</sup> This interaction between agreement rules and coreference has been observed in a number of West African languages. It was first described by R. C. Abraham (1953), and has since been noted by Pike (1967).

<sup>7</sup> The behavior of coordinate structures under movement rules varies slightly, depending on which of the conjunctions is involved. I will not discuss this point here.



8 The status of conjoined VP's in Yoruba is unclear. For some discussion of this question, see Stahlke (1970) where evidence is presented to show that because movement out of some serial verb constructions is permitted such constructions are probably not underlying coordinate structures but are more likely derived from complement structures.

9 The situation is actually more complex than this. Although it seems that the condition on humanness of nouns is generally true, it is also the case that if there exists a particularly close semantic connection between a verb and an object, the first conjunct of the object can be pronominalized. An example of this is the sentence

ilá<sub>1</sub> ni mo fise òun<sub>1</sub> àti ẹfẹ

okra<sub>1</sub> Topic I am-cooking it<sub>1</sub> and greens

in which ilá has been topicalized and the pronoun òun is left behind. If the verb sẹ 'cook' is replaced by another verb, such as rà 'buy' or rí 'see', the sentence becomes ungrammatical. I owe this example to Olú Ajólóre.

10 Because of certain tonal assimilation rules in Yoruba the Associative mid tone is usually heard only before a consonant-initial noun or the consonant-initial emphatic possessive particle tí. For an extensive and lucid treatment of this mid tone see Courtenay (1969).

11 Question formation could also have been used here, but this process involves the topicalization of some question word and is therefore subject to the same restrictions as topicalization.

12 The English translations of (49i) and (49ii) are, of course, ungrammatical, although the Yoruba examples are not.

13 The Right Branch Constraint was independently proposed by Oláyíwolá Awóyalé (M.A. Qualifying Examination, December, 1972) at the time this paper was being written.

14 This discussion of the Complex NP Constraint will be confined to the most obvious cases, to show that the constraint is in fact valid for Yoruba. There are many interesting problems of NP-squishing (Ross, 1972) which, for the sake of brevity and clarity, I am ignoring.

15 As with the Complex NP Constraint, I am confining the discussion of the Sentential Subject Constraint to the most obvious cases. Violations of both these constraints are permitted, but the conditions under which they can be violated are far from clear at this time.

16 This solution has some obvious weaknesses, among the lesser of which are its blatant ad hoc character.



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### Introduction

In almost every textbook of English for speakers of other languages, recently and lately, where mentioned, are defined as synonymous. Generally they are considered to be members of the same syntactic category (i.e. adverbs). When examples of their synonymy are given, they are usually used with the Present Perfect or Present Perfect Continuous:

- (1) a. Lately she's been acting like a bitch. =  
b. Recently, she's been acting like a bitch.  
c. She's been in the mood for studying lately. =  
d. She's been in the mood for studying recently.

It is easy to find descriptions such as the following:

- (2) The words recently and lately generally come at the end of a sentence. When they are used with verbs in the Present Perfect, the two words...have the same meaning. (English for Speakers of Hebrew, Tel Aviv University)
- (3) lately: of late, recently, not long since.  
(The American College Dictionary)

In this paper I will attempt to show that recently and lately are not synonymous. I will justify this claim with syntactic as well as semantic evidence: they are structurally as well as semantically different. Though there indeed seems to be synonymy and overlap in many cases, we shall see that in fact, the differences far outweigh the similarities. In the first part of the paper, I will present data which indicate the differences between the two items. In the second part of the paper, I will attempt to account for these differences.

### Part I

Consider the following sentences:

- (4) a. He's been castrated recently.  
b. \*He's been castrated lately.
- (5) a. He's met his maker recently. (=die)  
b. \*He's met his maker lately. (≠ die)

In order to account for the fact that the b. sentences above are ungrammatical, I propose the following tentative hypothesis:

- (6) Recently refers only to/means one occurrence of an event;  
Lately refers to/means a repeated occurrence of an event.<sup>1</sup>

This claim would explain the following:

- (7) a. They've finished reading The Story of O recently.  
 b. \*They've finished reading The Story of O lately.  
 c. They've bought a new car recently.  
 d. \*They've bought a new car lately.  
 e. The anarchists have blown up a bank recently.  
 f. \*The anarchists have blown up a bank lately.

The second sentence of each pair, with lately, is ungrammatical because the sentence refers to one specific event and lately can only be used with sentences that describe a repeated or continuous action. If this hypothesis is correct, we would expect a sentence with either recently or lately to be grammatical when the sentence itself is ambiguous in terms of one or many occurrence.

- (8) a. Lately, I've beaten the shit out of him in bridge.<sup>2</sup> (many times)  
 b. I've recently beaten the shit out of him in bridge. (one time)  
 c. He's recently hit the jackpot. (one time)  
 d. He's hit the jackpot lately. (more than once)  
 e. Oscar has recently kicked the bucket. (=died)  
 f. Oscar has kicked the bucket lately. (=kicked buckets;#died)

Thus it would seem that recently can only co-occur with sentences denoting one-time actions. However, we can find immediate counter-examples to this claim.

- (9) a. Recently, I've been depressed all the time.  
 b. Recently, I've encouraged him to look for a job.  
 c. Recently, I've worked like a dog on this paper.

Most native speakers have claimed that the sentences in (9) refer to a continuous or repeated action. However, notice that recently is in initial position in the sentences in (9). Keeping that in mind, consider the following:

- (10) a. Recently, she has been depressed. (continuous)  
 b. She has recently been depressed. (at one time)  
 c. Recently, I've met him in the Union. (more than once)  
 d. I've recently met him in the Union. (once)  
 e. Recently, he's encouraged him to look for a job. (more than once)  
 f. He's recently encouraged him to look for a job. (once)

It would seem, then, that we have to change the generalization in (6) to account for the sentences in (10). Let us now claim that recently, when

initially, refers to a continuous or repeated event - otherwise it refers to a one-time action. If this modification is valid, we would expect sentences which describe a one-time action to be ungrammatical when found with recently in initial position.

- (11) a. He's recently been ex-communicated.
- b. \*Recently, he's been ex-communicated.
- c. He's recently been drafted.
- d. \*Recently, he's been drafted.
- e. He's recently kicked the bucket. (=died)
- f. \*Recently, he's kicked the bucket. (≠ died)

Now let us consider recently in sentence-final position.

- (12) a. I've been very depressed recently.
- b. I've beaten the shit out of him recently.
- c. I've encouraged him to look for a job recently.

These sentences are ambiguous. One reading for (12) a. has a continuous reading, the other a one-time reading. Thus (12) a. can be paraphrased by:

- (13) a. I was very depressed at one point in the past.
- b. I've been very depressed over a period of time.

This ambiguity can only exist when the sentence is "neutral" - i.e. when it could either refer to a repeated or a one-time action. However, let us consider recently with sentences that are not "neutral". There should then be no ambiguity.

- (14) a. John has been castrated recently. (one time only)
- b. He's painted his house white recently. (one time)
- c. He's finished reading The Story of O recently. (one time)
- d. He's kicked the bucket recently. (one time for die reading)
- e. He's been ex-communicated recently. (one time)
- (15) a. She's seemed so tired recently. (repeated)
- b. I've been to a lot of parties recently. (repeated)
- c. She's been on a diet recently. (repeated)

Thus, before we continue, I will again revise my hypothesis:

- (16) When recently is in pre-verbal position, it refers to/means a one-time action. When recently is initial, it refers to/means a repeated or continuous action. When recently is final, it can refer to/mean either: repeated or one-time.
- Lately (in final and initial position) always refers to/means a repeated or continuous action.

Let us now consider the Present Perfect Continuous. This verb form always describes a repeated or continuous action or event.

- (17) a. I've been living in New York for two years.
- b. \*I've been starting my homework.
- c. John's been dreaming about her every night.



- d. \*John's been kicking the bucket. (≠ die)<sub>4</sub>
- e. \*John's been finishing his dissertation.

Since the continuous form of the Present Perfect always refers to the repetition of an event, we would predict that recently can never occur in pre-verbal position with this construction.

- (14) a. Recently, she's been acting like a bitch.<sub>5</sub>
- b. \*She's been recently acting like a bitch.

Furthermore, recently in final position should only have the reading of a repeated action.

- (19) She's been acting like a bitch recently (=repeated/continuous)

Note, too, that lately is almost never pre-verbal.<sup>6</sup>

- (20) a. Lately, she's been feeling depressed.
- b. She's been feeling depressed lately.
- c. \*She's been lately feeling depressed.
- d. \*Susan's been lately trying to improve her posture.<sup>7</sup>

Up to here, I have been considering the distribution of lately and recently with respect to the Present Perfect and Present Perfect Continuous. I will now consider these items with respect to other constructions, where we shall see that the differences are even sharper. Consider the following:

- (21) a. He recently met his dream girl at a pot party.
- b. \*Lately, he met his dream girl at a pot party.
- c. He was ex-communicated recently.
- d. \*He was ex-communicated lately.
- e. Nixon was re-elected recently.
- f. \*Nixon was re-elected lately.
- (22) a. I lived in New York until recently.
- b. \*I lived in New York until lately.
- c. I worked on that very recently.
- d. \*I worked on that very lately.

The non-occurrence of lately is not due to the fact that those sentences are of the one-time action type, since

- (23) a. He was depressed recently.
- b. \*He was depressed lately.

Even with Past Continuous, lately is ungrammatical:

- (24) a. \*I was feeling good lately.
- b. \*John was doing his homework lately.

However, although recently occurs freely with sentences in the past tense, there are some restrictions on its position in the sentence:

- (25) a. \*Recently, he was ex-communicated.
- b. ?\*Recently, he met his dream girl at a pot party.
- c. \*Recently he made many new friends. (more than one time)

but

- c. He was recently ex-communicated.
- d. He recently met his dream girl at a pot party.
- e. He recently made many new friends. (at one time)

It would seem then, that the same restrictions that were discussed in connection with recently with Present Perfect structures hold here: recently initially refers to a repeated action. Pre-verbally, it refers to a one-time action, and in final position, it can refer to either.<sup>9</sup>

We have established that lately cannot co-occur with the past tense. It can, however, be used with present tense verb forms:

- (26) a. Lately, he is willing to forgive and forget everything and everybody.
- b. He is looking good lately.
- c. Lately, he is able to eat everything - even his mother-in-law's cooking.
- d. Lately, he makes his bed every day.
- e. Lately, I can work better than ever.
- f. Lately, I have to/must get up <sup>10</sup>five minutes earlier in order to get to work on time.

However, consider recently with the same sentences from (26):

- (27) a. \*Recently, he is willing to forgive and forget everything and everybody.
- b. \*Recently, he is looking good.<sup>11</sup>
- c. \*Recently, he is able to eat everything - even his mother-in-law's cooking.
- d. \*Recently, he can work better than ever.

There seems to be a fairly clear-cut division between recently with past tense events and lately with present tense events. This division also exists in Hebrew, where there are two items which correspond to recently and lately: leachrona (=recently) and bazman acharon (=lately).<sup>12</sup>

- (28) a. bazman acharon who lomed kasey  
lately he is studying hard
- b. \*bazman acharon who lamad kasy.  
\*lately he studied hard
- c. \*leachrona who lomed kasey  
\*recently he is studying hard
- d. leachrona who lamad kasey  
recently he was studying hard
- e. bazman acharon who yexhol la-asote hakol.  
lately he can do everything
- f. \*leachrona who yexhol la-asote hakol.  
\*recently he can do everything
- g. \*bazman acharon who hiya yexhol la-asote hakol.  
\*lately he was able to do everything
- h. leacharon who hiya yexhol la-asote hakol  
recently he was able to do everything

Thus in Hebrew, leachrona (=recently) is generally found with sentences in the past tense, and bazman acharon (=lately), with sentences in the present tense. Furthermore, there is the same continuous (=lately) vs. continuous/one-time action (=recently) dichotomy:

- (29) a. bazman acharon who lomed kasy.  
           lately           he is studying hard.  
       b. \*bazman acharon who mitchaten.  
           \*lately           he gets married  
       c. leachrona who pagash oti.  
           recently he met me (one time)  
       d. leachrona who ra-a ota hamesh pameme.  
           recently he saw her five times. (more than once)<sup>13</sup>

## Part II

Let us now summarize all the previous claims about recently and lately.

- (30) The maximal distribution of the two items are:

<u>initial position</u>	<u>pre-verbally</u>	<u>finally</u>
recently/lately		recently/lately = repeated
	recently	recently = one-time

Recently has a past time reference; lately is open-ended in that it refers to the present as well as to the past.

The meaning of recently is roughly: at one period of time in the past. The meaning of lately: a repeated action from the near past up to and possibly through the present.

I will further claim below that recently and lately with repeated actions are sentence modifiers (they have the sentence as their entire scope) and that recently with one-time actions in the past is a verb phrase modifier (or a pre-verbal)(with the verb phrase within its scope). However, before I attempt to motivate these new claims, let us consider the claim that recently is totally within the past.

It is true that recently and not lately can co-occur with sentences in the past tense. Thus it follows that when recently is used with the Present Perfect structure, it still refers to a period in the past, no matter how close. Lately, on the other hand, is open-ended with respect to the past and the present, and it implies the possibility of continuation into the future. (Hence, it can never co-occur with the past tense.) Thus,

- (31) \*U.S. soldiers have been fighting in Viet Nam lately.  
 would be unacceptable (since we believe that they are not fighting there)

now) while,

(32) Recently, U.S. soldiers have been fighting in Viet Nam.  
is fine.

Other examples of this distinction can be seen in (33):

- (33) a. LBJ's most recent official act was the opening of the LBJ Library.  
b. Ezra Pound's most recent book of poetry is totally incomprehensible.

but not:

- c. \*LBJ's latest official act was the opening of the LBJ Library.  
d. \*Ezra Pound's latest book of poetry is totally incomprehensible.

(33) c. is ungrammatical because we know that LBJ is dead and that there will be no more official acts. Likewise, d. is starred because we know that Ezra Pound is dead and thus will not be able to write any more poetry. In sentences (34) below the difference between recently (=completed in the past) and lately (=repeated action in the past and up through the future) is especially transparent.

- (34) a. Harry's most recent book is his last.  
b. \*Harry's latest book is his last.

Thus b. is ungrammatical because the use of latest seems to imply that Harry will write more books.

Before I deal with the obvious question of why recently (in initial and final position) is able to co-occur with sentences implying repeated actions (when I have claimed that it means at one period of time), first let us consider the distribution of the two items. Previously, I claimed that lately (and recently in initial and final position) is a sentence modifier. Its scope could be roughly characterized as:

(35) lately/recently [John has tried to overcome his problems]<sub>S</sub><sup>15,16</sup>  
I also claimed that recently (in pre-verbal and final position) is a verb phrase modifier. Its scope could be roughly characterized as:

(36) John [recently has tried to overcome his problems]<sub>vp</sub><sup>17</sup>  
The transformation shifting recently and lately to the end of the sentence would be something like (37):

- (37) Optionally move recently and lately to the right of an NP in its clause.<sup>18</sup>



For example:

(38) Pre-verbal recently:

- a. John has recently tried to overcome his problems.
- b. John has tried to overcome his problems recently.

(39) Sentence modifiers recently and lately:

- a. Lately/Recently John has tried to overcome his problems.
- b. John has tried to overcome his problems recently/lately.

Notice that I have been able to capture the difference between recently in initial position and in pre-verbal position by positing a different underlying form for pre-verbals and sentence modifiers. The two would be subject to the same transformation moving them optionally to the end of their clause.

Notice, though, that the transformation posited in (37) will be too strong. Consider the following:

(40) Pre-verbal recently:

- a. John has recently informed us that he has left school. =
- b. John has informed us recently that he has left school.

but

- c. John has informed us that he has recently left school. ( $\neq$  b or a)
- d. John has informed us that he has left school recently. ( $=$  c,  $\neq$  a or b)<sup>19</sup>
- e. John has recently beaten up the boy who came from Rumania.  $\neq$
- f. John has beaten up the boy who came from Rumania recently.

(41) Sentence modifiers recently and lately:

- a. Lately, Tom's been complaining that he's been feeling tired. =
- b. Tom's been complaining lately that he's been feeling tired.

but

- c. Tom's been complaining that lately he's been feeling tired.  
( $\neq$  a or b)
- d. Tom's been complaining that he's been feeling tired lately.  
( $=$  c,  $\neq$  a or b)

In order to account for sentences (40) and (41) we will have to posit a constraint on movement.

- (42) Recently and lately (a pre-verbal and the sentence modifiers) can move to the right of an NP in its clause as long as it does not pass over an S.

The constraint will explain the following:

- (43) a. \*I (have) castrated the boy who is from Rumania recently.<sup>20</sup>
- b. I (have) castrated the boy from Rumania recently.

This recently is clearly the one-time pre-verbal since castrate can never (or almost never) be a repeated action. Thus, after Whiz Deletion and



Pruning, movement can occur in (43) b. since there would be no instance of S. (The S node has been deleted by Pruning.)

The constraint will also account for the pair of sentences in (44):

(44) Lately, we have been sending money to countries which are underdeveloped.

≠ We have been sending money to countries which are underdeveloped lately.

Lately, we have been sending money to underdeveloped countries.

= We have been sending money to underdeveloped countries lately.

Thus we see that the output of the transformation in (37) will, in some cases, produce the same surface structure for the sentence modifiers and pre-verbal recently: the end of the sentence. This structure will necessarily be ambiguous:

(45) I have been depressed recently. (either at one time in the past or continuously)

The two underlying structures for (45) would be approximately (46):

(46) a. recently [I have been depressed]<sub>S</sub> ↑

b. I [recently have been depressed]<sub>VP</sub>

and (37) will optionally move recently to the end of its clause.

Up to now, I have carefully avoided one other very crucial question: if recently has, as part of its meaning, the notion "one-time action (in the past)," why does it (or can it) occur with sentences that are obviously repetition? In order to even begin answering that question, it is necessary for me to first outline some rough observations about the Present Perfect.

There seems to be a sharp distinction between the behavior of stative and non-stative verbs, at least with the Present Perfect. Stative verbs, in neutral sentences (no specifying modifiers) have a strong feeling of continuity.

(47) I've been unhappy.

While the sentence above may be ambiguous (i.e. also have a reading of a one-time action), it is the reading of continuity that is immediately apparent.

Non-stative verbs have a strong feeling of one-time action in the past. For example:

- (48) a. We've met her.  
b. We've built it.  
c. They've talked about it.

In general, to force the "continuous or repeated action" reading of non stative verbs, the Present Perfect Continuous is used:

- (49) a. We've been meeting her.  
b. We've been building it.  
c. They've been talking about it.

Thus verbs like seem, felt, etc. (as in "I've felt unhappy") appear to be marked (or unmarked) for continuity by their very "nature" even though the continuous marker (usually realized by being) may not be overtly realized phonetically. This analysis of stative verbs can explain the synonymy of:

- (50) a. Lately, I've felt good. =  
b. Lately, I've been feeling good.

the only difference being that in (50) a. continuity is not overtly realized.

With non-stative verbs, however, there seems to be a real difference between the Present Perfect and the Present Perfect Continuous:

- (51) a. Lately, she's slept at home. #  
b. Lately, she's been sleeping at home.

Sentence (51) a. means that she has slept at home on more than one occasion but that she might also be sleeping somewhere else - when she is not sleeping at home. Sentence (51) b. means that she has only been sleeping at home - nowhere else. (51) a. has the meaning of a repeated action; (51) b. has the meaning of a continuous action.

Therefore, lately with sentences in the Present Perfect, forces the interpretation of more than one time (for statives and "reinforces" the continuity of non-statives). As we have seen, this is different from the continuity expressed by the continuous -ing marker with the Present Perfect: lately means a repeated action rather than a continuous one. (This is also evident in the sentences: "His latest novel is a flop." Here, one understands that he has written previous novels; latest means the most recent of a series.) When lately is used in conjunction with sentences in the Present Perfect Continuous, or with Present Perfect forms of stative verbs, there seems to be no contradiction and its meaning of "not-too-distant past" appear to be dominant.

Let us now return to the problem of recently as a sentence modifier. In the sentence,

- (52) Recently, I've been watching T.V. a lot  
it appears that recently (with its meaning of one-time) is not in conflict

with the continuous activity expressed by the Present Perfect Continuous. I would claim here that recently always specifies one-time in the past and that in cases like (52) recently is referring to the period of time in which these actions took place - be it one week or one month. Thus, recently would still be referring to one completed action in the past: the watching of television. This analysis seems intuitively correct since we have established that the scope of sentence modifiers is the entire sentence and not just the VP. Thus, recently refers to the entire sentences and places it within one point in the past.

However, what about recently with the Present Perfect when there are no overt markers of continuity or repetition? There are no problems with stative verbs in the Present Perfect - they are not overtly marked for continuity, but in fact, continuity seems to be part of their meaning. Thus again, recently with a meaning of one-time action in the past, is a sentence modifier whose scope is the entire sentence which has a continuous meaning (due to the continuity inherent in stative verbs).

There is, unfortunately, still the problem of non-stative verbs. In the Present Perfect, these verbs refer to an action that occurred at one time in the past, i.e.

(53) I have built a house.

But perhaps that is not entirely correct. Textbook explanations for such sentences as (53) often state that the sentence refers to an action which occurred at one time in the past, but has an "influence" on the present. There is some truth in this since if sentence (53) only meant one time in the past, it should be synonymous with (54):

(54) I built a house. (# I have built a house.)

Thus, let us tentatively claim that while non-stative verbs in the Present Perfect seem to refer to a one-time action, they are, in actuality, "open" verbs and allow a meaning of repetition.

This is obviously just speculation, but the following facts must somehow be explained:

- (55) a. I've recently built a house. (one time)  
b. I recently built a house. (one time)

Sentences (55) a. and b. are synonymous - both mean a one-time action in the not-too-distant past. However,

- (56) a. I've built a house.  
b. I built a house.

are not synonymous. It seems to be the addition of recently (as a pre-verbal) that specifies built in (55) and gives the reading of a one-time action, thus creating the synonymy between the past tense and the Present Perfect.

In conclusion, we have seen that surface structures containing recently can be analyzed into sentence modifier + sentence (recently, lately) and pre-verbal + verb phrase (recently). This analysis would explain the apparent difference in meaning between recently in pre-verbal position and recently in sentence initial position. It will also explain the ambiguity that we have noted when recently is in sentence final position. I have attempted to motivate the claim that recently refers to one point in the not-too-distant past, and lately refers to a repeated action in the past and possibly up to and through the present. I have posited one optional transformation moving the sentence modifiers and the pre-verbal recently to the end of their clauses. In addition, I have shown that this movement is subject to a constraint:

recently and lately cannot move over an S. Finally, I have briefly considered the difference in behavior of stative and non-stative verbs with the Present Perfect.

It is clear that I have only scratched the surface in my attempt to characterize the phenomena. Many of my explanations are impressionistic but the data need to be explained by some theory and hopefully my observations will be of value even if my explanations for them are not.



FOOTNOTES

1. For ease of presentation, in this paper I will be using such terms as "sentence", "has the meaning of", "refers to", "continuous meaning", "one time meaning", etc. without formally defining them. In (6), "refers to/means" is a short-hand way of stating: "the item can only be used with sentences that have the meaning of one occurrence of an event." It is probably the case that the reference to a one-time event is part of the meaning of recently.

2. At present, I will ignore the difference in position of the two items. This point will be discussed in some detail below.

3. Notice that without a pause (indicated here by a comma), the starred sentences sound somewhat better:

(i) Recently he's been drafted.

(ii) Recently he's been ex-communicated.

4. This sentence would be acceptable if we interpret it as meaning, "John has been talking about finishing his dissertation for a while, and he keeps saying that he is almost finished." However, it is not this reading that is being discussed here.

5. There are some adverbs that can occur in pre-verbal position with Present Perfect Continuous structures.

(iii) She's been slowly going to hell with herself.

Notice, however, that frequency adverbs (i.e. usually, frequently, sometimes, etc.) do not occur in that position.

(iv) \*She's been frequently studying hard.

\*She's been generally feeling good.

\*She's been usually going to choir practice in the afternoon.

6. Lately can occur pre-verbally in sentences like:

(v) Much to everyone's surprise, the so-called United Left has lately begun showing up on the long end of the opinion poll. (Time Magazine)

This apparent counter-example is probably permissible because lately in any other position would give the sentence a different reading.

(vi) a. Lately, much to everyone's surprise, the so-called United Left ...

b. Much to everyone's surprise, lately the so-called United Left ...

c. Much to everyone's surprise, the so-called United Left has begun showing up on the long end of the opinion poll lately.

In Part II of this paper, I will propose an explanation for this phenomenon.

Notice, too, that the following is grammatical:

(vii) I've only lately begun understanding Chomsky.

but

(viii)?I've lately begun understanding Chomsky.

7. Notice that

(ix) ?Susan's lately been trying to improve her posture

sounds better. Even better is

- (x) Susan lately has begun trying to improve her posture.

8. If we accept the sentence

- (xi) I've lived in New York until recently  
but not

(xii) \*I've lived in New York until lately,  
this would be further evidence that recently can co-occur with past tense verbs while lately cannot.

9. Notice the following:

- (xiii) \*I was recently making a lot of money.

I was making a lot of money recently.

?Recently I was making a lot of money.

It is clear why the first sentence is ungrammatical - preverbally, recently must refer to a one-time action. The second sentence is grammatical since in final position, recently can refer to either a one-time action or a repeated action. However, the strangeness of the third sentence is puzzling, since I would expect the sentence to be acceptable - recently in initial position must refer to a continuous or repeated action. It is the case, however, that recently generally sounds better in final position with sentences in the Present Perfect Continuous:

- (xiv) I have been drinking a lot of beer recently  
sounds better than

- (xv) Recently, I've been drinking a lot of beer.

10. Lately cannot co-occur with certain present tense constructions. For example:

- (xvi) \*\*Lately I am at home today.

Clearly this is ungrammatical because "I am at home today" is not a repeated action.

11. Notice that the sentence is worse when recently is pre-verbally:

- (xvii) \*\*He is recently able to eat everything.

It sounds better when recently is in final position:

- (xviii) ?He is able to eat everything recently.

12. Hebrew does not have any structure corresponding to English Perfects. These notions are expressed by a combination of adverbs and tense: lately/since/for + present tense; recently/just/already + past tense.

13. It might be interesting to note here another observation about the two items. These observations do not illustrate the differences between them: they act the same way in the forms below. However, the phenomenon is curious.

Notice that there seems to be a difference in acceptability in the following pairs of sentences.

- (xix) a. ?I have brushed my teeth recently/lately.

- b. I haven't brushed my teeth recently/lately.

- c. ?I have cleaned the house recently.

- d. I haven't cleaned the house recently.

The b. sentences are completely acceptable, while the a. sentences are "strange." It may be the case that there is some judgement as to the knowledge of the world and general standards involved in the difference in acceptability. That is, a sentence like "I have brushed my teeth recently/lately" implies that one hasn't done that operation before. Brushing one's teeth is generally considered part of one's everyday experiences. It is the non-brushing of teeth that is unusual. It is this unusual meaning which sounds better in the Present Perfect. Note, however, that this is not a distinction between statements and their negation; the negation of a sentence will often be the unacceptable version.

- (xx) a. I've become a bitch recently/lately.  
b. ??I haven't become a bitch recently/lately

(assuming that "bitchiness" is not my usual behavior)

- c. He has gotten a divorce recently.  
1. ??d. He hasn't gotten a divorce recently.

(assuming that he doesn't make a habit of getting divorced)

In "neutral" sentences, where there no judgements as to what is or is not normal, the distinction does not occur and the affirmative and the negation both are acceptable.

- (xxi) a. The crime rate has increased recently/lately  
b. The crime rate hasn't increased recently/lately.  
  
c. I haven't spoken to my mother recently/lately.  
d. I've spoken to my mother recently/lately.  
  
e. They've made some new breakthroughs in cancer research recently/lately.  
f. They haven't made any new breakthroughs in cancer research recently/lately.

Furthermore, note that the questionable sentences in (xx) are equally as bad, if not worse, when put in the past tense:

- (xxii) a. ?He didn't get a divorce recently.  
b. ?He didn't shave his head recently.

However, when the questionable sentences are affirmatives, they sound much better when expressed in the past tense:

- (xxiii) a. I brushed my teeth recently.  
b. I wore underpants recently.

In general, recently with negative sentences in the past sounds strange:

- (xxiv) a. ?I didn't brush my teeth recently.  
b. ?The crime rate didn't increase recently.

But the affirmative version of the neutral sentences are fine in the past:

- (xxv) a. The crime rate increased recently.  
b. I spoke to my mother recently.  
c. They made some new breakthroughs in cancer research recently.

14. The determination of how distant in the past recently can refer to depends on many things: knowledge of the world, subjective feelings, etc. Hence, the following sentence is correct, although different people may have a different concept of what recently (in terms of how distant in the past) refers to:

(xxvi) Linguistics has changed a great deal recently.

(since last year, since 1956, since the neo-grammarians)

15. Obviously, this is an extremely rough representation of the sentence. I make no claims about its accuracy or predictive powers. I have posited this form in order to illustrate my claim that the difference in meaning between recently in initial position and recently in pre-verbal position is due to a difference in underlying scope.

16. The exact position of recently cannot be determined at this point. However, I have placed it before the entire sentence in (35) rather than at the end of the sentence or verb phrase because there will be cases where movement to the end of the sentences (or clause) will be blocked. In those cases, if I were to posit the items in underlyingly final position, there would be optional movement to the left except when movement is obligatory (due to an S). It is true that I could say that movement is obligatory just in case ambiguity would arise. While this seems parallel to the transderivational constraint on Relative Clause Movement (do not move the relative clause to a place where a similar derivation could occur), it is in fact different. In this case, movement would be obligatory just in case ambiguity could occur; in Relative Clause Movement, movement is blocked just in case ambiguity could occur. In any case, at this point, it is not crucial where the pre-verbal and sentences modifiers are to be "hung".

17. As I mentioned in footnote 15, this is a very rough schematic approximation of the sentence. I will not, at this point, discuss the problem of the Perfect marker have and whether recently would "modify" the have+ verb or whether, as McCawley claims ("Tense and Time Reference in English"), have is a higher verb.

18. It is not certain whether it is correct to specify that the pre-verbal recently and sentence modifiers recently and lately can only move to the right of an NP. Notice, however, that these items can never occur before a noun:

(xxvii) a. \*I have gone recently home.

b. \*John has been drinking lately beer.

but:

c. I recently have gone home.

d. John lately has been drinking beer.

19. One informant has claimed that (40) d. can be ambiguous: it can have the reading of (40)a. or c. I personally do not agree with this judgement. However, in such a case, the speaker would



have a weaker constraint on movement. However, notice that he agreed with the judgement of (40) c., i.e. that it is not synonymous with (40) a. and b.

20. It is not crucial that Present Perfect be used here, since we have already seen that the distribution of recently seems to be identical with the past tense as well as with the Perfect.



THE DERIVATION OF EACH OTHER

Gregory Thomas White

In his "Grammar of Coordinate Conjoined Structures", Ray Dougherty considers a number of syntactic phenomena involving the distribution of certain quantifiers and conjunctions. He also deals with the derivation of reciprocal sentences containing the construction each other. It is on his discussion and analysis of each other that this paper will focus primarily. I will begin with an exposition of Dougherty's analysis. This exposition will be followed by a criticism of his analysis, a comparison of this analysis with others that I am familiar with, and then finally I will suggest an alternative analysis of the distribution of each other which, I maintain, will account for a wider range of data.

Dougherty's analysis of each other is based on the following phrase structure rules:<sup>1</sup>

- (1) a.  $S \rightarrow NP VP$
- b.  $VP \rightarrow Aux V (NP) (PP)$
- c.  $S \rightarrow (Q) S^n (adv)$
- d.  $NP \rightarrow (Q) NP^n (adv)$

where  $Q$  = each, all, both, either, neither; and

$n \geq 2$

In addition to these phrase structure rules, Dougherty has developed a set of transformations which include the Conjunction Insertion Transformation, the Conjunction Erasure Transformation, the Quantifier Movement Transformation, the Quantifier Post-position Transformation and the Each Other Transformation. These rules will be discussed in the order in which they must apply.

The purpose of the Conjunction Insertion Transformation is simply to insert and, or or nor in deep structures which have resulted from the operation of (1c)-(1d). Which conjunction is inserted is determined by the features introduced in the deep structure rules not listed in (1).<sup>2</sup>

The Conjunction Erasure Transformation erases all but the last

conjunction where more than two NP's are conjoined. Thus, it derives (2a) from (2b):

- (2) a. John, Bill and Tom eat meat.  
 b. John and Bill and Tom eat meat.

The Quantifier Postposition Transformation is stated as follows:

(3) SD: ( $S$  ( $NP^Q M_1$ ) ( $VP^M M_2$ ))

SC: ( $S$  ( $NP^M M_1$ ) ( $VP^Q M_2$ ))

where Q = each, all, both;

and M = variable

This transformation is optional if the NP is a plural noun phrase, obligatory if the NP dominates a conjunction of noun phrases, and blocked if the NP is a collective. The simple objective of this transformation is to move the quantifier from in front of the noun phrase to the position immediately following, and thus it derives the following (b) sentences from the (a) sentences:

- (4) a. Each of the men will drink a beer.  
 b. The men each will drink a beer.  
 (5) a. Both of the men will drink a beer.  
 b. The men both will drink a beer.

It must be blocked, however, in order not to produce (6b):

- (6) a. Each one of the group left.  
 b. \*The group each left.

The purpose of the Quantifier Movement Transformation is to take the quantifier moved by (3) and move it even further to the right. It is thus stated as follows:

(7) SD: ( $S^M M_1 Q Aux M_2$ )

SC: ( $S^M M_1 Aux Q M_2$ )

where Q = each, all, both

and M = variable

This transformation derives the following (b) sentences from the (a) sentences:

- (8) a. The men each will drink a beer.  
 b. The men will each drink a beer.

(9) a. The men all will drink a beer.

b. The men will all drink a beer.

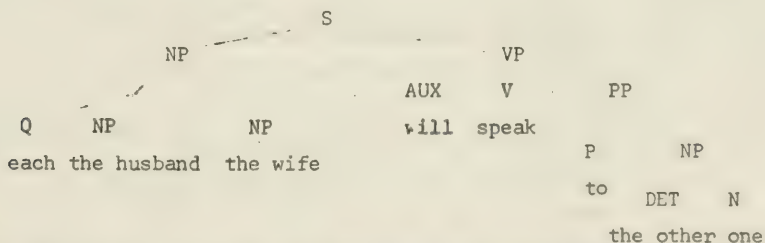
The Each Other Transformation, as it is formulated by Dougherty, is actually two transformations. The first converts structures such as (each) (<sub>PP</sub> P the other) to (<sub>PP</sub> P each other), where P=preposition. The second converts Structures such as (each) (<sub>NP</sub> the other) to (<sub>NP</sub> each other). Whether these two transformations are optional or obligatory is not specifically indicated by Dougherty, but I assume from the examples he gives that the first is optional, and the second is obligatory.

Another important aspect of Dougherty's analysis, in addition to the above phrase structure rules and transformations, is that other is derived from the deep structure pronoun the other one. This is in complete harmony with Postal's ideas concerning the derivation of certain pronouns.

As an example of how this analysis works, we can consider the derivation of (10):

(10) The husband and wife will each speak to the other.

The deep structure of this sentence would be roughly the one indicated in Figure 1.



After Conjunction Insertion has applied, then Quantifier Post-position is obligatory, since the NP contains a conjunction of singular nouns. At this point, if Quantifier Movement does not apply, then (11) will result:

(11) The husband and wife each will speak to the other.

If, on the other hand, Quantifier Movement does apply, then either (10) or (12) will result:

(12) ?The husband and wife will speak each to the other.

If, in addition to the Quantifier Movement Transformation, the Each Other transformation applies to (12), then (13) will result:

(13) The husband and wife will speak to each other.

Although this analysis at first appears to be appealing, I don't think it can stand the heat of a close scrutiny. For one thing, there are a number of unacceptable sentences involving relativization which the Quantifier Post-position Transformation (hereafter the QP transformation) and the Quantifier Movement Transformation(hereafter the QM transformation) produce. Consider (14):

- (14) a. \*I know that Marc and Linda each, who sleep with each other, are in love with the other.  
 b. ?I know that Marc and Linda, who sleep with each other, are in love each with the other.  
 c. I know that Marc and Linda, who sleep with each other, are each in love with the other.  
 d. I know that Marc and Linda, who sleep with each other, are in love with each other.  
 e. \*I know that Marc and Linda each, who each sleep with the other, are in love with the other.  
 f. I know that Marc and Linda, who each sleep with the other, are each in love with the other.  
 g. ?I know that Marc and Linda, who each sleep with the other, are in love each with the other.  
 h. I know that Marc and Linda, who each sleep with the other, are in love with each other.  
 i. \*I know that Marc and Linda each, who sleep each with the other, are in love with the other.  
 j. ?I know that Marc and Linda, who sleep each with the other, are each in love with the other.  
 k. ?I know that Marc and Linda, who sleep each with the other, are in love each with the other.  
 l. ?I know that Marc and Linda, who sleep each with the other, are in love with each other.

As they are presently stated, the QP and QM transformations will produce all the sentences in (14)--the unacceptable as well as the acceptable.

The QP and QM transformations also appear to present problems with sentences involving dative movement. That is, again these two transformations produce aberrant sentences:

- (15) a. Morris and Lou each gave a book to the other.  
 b. \*Morris and Lou gave each a book to the other.  
 c. ?Morris and Lou gave a book each to the other.  
 d. Morris and Lou each gave the other a book.  
 e. Morris and Lou gave each other a book.

It is not clear how these two transformations could be revised in order to prevent sentences like (15b)-(15c).

Besides producing sentences which are unacceptable, Dougherty's analysis also fails to account for a number of sentences which are acceptable. Consider (16) and (17):

- (16) a. Both of the men hate each other.  
 b. The men both hate each other.  
 c. The men both are tired of each other.  
 d. The men are both tired of each other.  
 (17) a. All the girls and boys love each other.  
 b. The girls and boys all love each other.

These sentences cannot be produced under Dougherty's scheme because only one quantifier per NP can be introduced according to the phrase structure rules. Thus, (16) and (17) cannot be accounted for because they contain more than one quantifier.

Another set of sentences which this analysis can't account for involves those containing the complementizer found in the following sentences:

- (18) a. The soldiers deeply regretted each other's firing  
 on the helpless native.  
 b. Mary and Jane constantly criticized each other's  
 getting in the way of their mother while she was  
 trying to fix dinner.

The sentences in (18) cannot be accounted for under Dougherty's scheme because he cannot explain how the each and the other come to stand together in the surface structure of these sentences. That is, under his analysis, whenever each and other appear together in a particular surface structure, it's because the each has been moved transformationally from the left to the right. It is difficult to see where the each could have come from in (18) following this analysis, particularly in view of the constraint on each which prevents it from moving out of its original simplex sentence.<sup>4</sup>



Thus, we see that Dougherty's rules not only produce sentences which are unacceptable, they also can't account for a large body of acceptable sentences. The first thing one might try to do in this situation is to see whether or not Dougherty's analysis can be patched up suitably. This does not appear to be the case. Perhaps most of the problems involving the QP and QM transformations and relative clauses could be solved by making these transformations obligatory in precisely those situations where failure to apply QM results in a bad sentence (see (14a) and (14i) for example). Or perhaps in those cases involving dative movement where QM produces a bad sentence, the application of QM could be blocked, say, when its application would result in the placement of a quantifier before an object noun, as in the case of (15b). Still other adjustments would be necessary to account for the sentences of (16)-(18). But it is the sentences in (16)-(18)--especially (18)--which indicate that the description of each other requires an entirely different approach than that of Dougherty, and not just the minor adjustments of individual transformations.

One approach which does differ considerably from Dougherty's is the one presented in "Coordinating Conjunctions in English" by Lila Gleitman, and accepted by George Lakoff and Stanley Peters in "Phrasal Conjunction and Symmetric Predicates", which derives each other from underlying conjoined sentences. That is, the following (a) sentence is derived from the (b) sentence:

- (19) a. Mark and Linda despise each other.
- b. Mark despises Linda and Linda despises Mark.

However, Dougherty notes--and correctly, I think--that in a sentence such as (20a) where there are more than two conjuncts in the antecedent of each other, the sentence which is supposed to underlie (20a) could actually be false.<sup>5</sup> That is, (20a) could be said even if Tom didn't hit Dick:

- (20) a. Tom, Dick and Harry hit each other.
- b. Tom hit Dick, and Tom hit Harry, and Dick hit Tom, and Dick hit Harry, and Harry hit Tom, and Harry hit Dick.

Furthermore, there are cases such as (21a) where the underlying sentence according to this analysis is semantically deviant:

- (21) a. Tom, Dick and Harry killed each other  
 b. Tom killed Dick, and Tom killed Harry, and Dick killed Tom, and Dick killed Harry, and Harry killed Tom and Harry killed Dick.

Finally, there are instances such as (22) where the underlying sentence makes perfectly good sense, yet where the derived surface structure with each other is unacceptable:

- (22) a. John walked between Bill and Tom, and Bill walked between John and Tom, and Tom walked between John and Bill.  
 b. \*John, Bill and Tom walked between each other.

Thus, it seems that this analysis, too, is not without its difficulties.

It seems to me that most of the problems encountered by the two preceding analyses could be avoided if each other were assumed to be a single constituent in the deep structure. I would suggest that the reciprocal pronoun each other is derived from a deep structure pronoun each other one in much the same way that Postal derives he and she from he one and she one.<sup>6</sup> This would be a separate and distinct pronoun from the reciprocal the other--which would also be derived from a deep structure pronoun--but the difference would simply be one of singular versus plural. The other would be marked [+sing] and each other would be marked [-sing]. Furthermore, I would suggest that the Conjunction Insertion Transformation, the Conjunction Erasure Transformation of (2), the QP transformation of (3) and the QM transformation of (4) be retained as they are stated. These transformations would apply in the order just listed. Thus, the deep structure of

- (23) John and Susan love each other.

would be essentially the same as the surface structure. The deep structure of

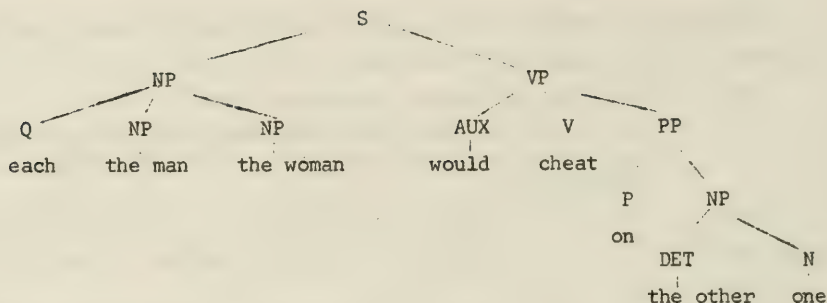
- (24) The man and the woman would each cheat on the other.

is indicated in Figure 2. Conjunction Insertion would apply first. Then, since the quantifier precedes the conjunction of two singular nouns, the QP transformation is obligatory. If no other transformations apply, then

(25) results:

- (25) The man and woman each would cheat on the other.

If the QM transformation applied to (25), however, then (24) would result.



In addition to the fact that this alternative analysis seems to be intuitively satisfying, there appears to be some evidence that each other is indeed derived from a single constituent in the deep structure and is not the result of any transformation which brings each from one part of the sentence to another part of the sentence where other happens to be. Consider the sentences in (26)-(29):

- (26) a. They ignored the oil on them.  
       b. \*They ignored the oil on themselves.
- (27) a. We smelled the perfume on us.  
       b. \*We smelled the perfume on ourselves.
- (28) a. They held the firecrackers behind them.  
       b. \*They held the firecrackers behind themselves.
- (29) a. They placed their guns in front of them.  
       b. \*They placed their guns in front of themselves.

In order to explain why the (a) sentences are possible while the (b) sentences are not, Lees and Klima state that a pronoun may be reflexivized only if it is in the same simplex sentence as its antecedent.<sup>7</sup> Since the underlying structures of (26)-(29) contain two sentences, one of which is a relative clause, the reflexivization rule cannot apply. Or, conversely, if it does apply, the ungrammatical (b) sentences will result.

Now consider the following sentences:

- (30) a. They ignored the oil on each other.  
       b. We smelled the perfume on each other.  
       c. They held the firecrackers behind each other.  
       d. They placed their guns in front of each other.

If we assume that the deep structure of the sentences in (30) also contains two sentences, then it is difficult to see how these sentences can be derived unless each other in these sentences is derived from a single constituent.

Unlike Dougherty's analysis, this new analysis could account for the sentences in (15) involving dative movement. The unacceptable sentences in (15) would not be generated by this analysis because none of the transformations which would move quantifiers would move them as far to the right as they appear in the deviant sentences in this section. Furthermore, this analysis could also account for the sentences of (16)-(17). According to this analysis, only one quantifier would be introduced per NP since the each of each other would be part of another NP--not the subject NP. However, a sentence such as (31)

(31) \*Each of the men hates each other.

would be ungrammatical under this analysis because each other would require a plural antecedent. This analysis could also account for the sentences of (18), since each other would be derived from a single deep structure pronoun. Furthermore, one would like to be able to treat each other and one another as mere lexical variants of the same construction, with the same derivation. Dougherty cannot derive one another in the same manner that he derives each other, as (32) indicates:<sup>8</sup>

(32) a. John and Bill each hate the other.

b. \*John and Bill one hate another.

Still, although this analysis might be preferable to Dougherty's or those developed by Gleitman, and Lakoff and Peters', further investigation will be required to fill in the above outline with more specifics. One further problem that such an investigation will have to contend with is why the conjunction and must occur with each other, and not or or nor. That is, hopefully, further work will be able to explain the ungrammaticality of the sentences in (33):

(33) a. \*The man or the woman would cheat on each other.

b. \*Marc nor Linda hate each other.

Also, I am not sure at this point that this alternative analysis could prevent the generation of the ungrammatical sentences in (14) involving relativization any better than Dougherty's analysis. And finally, there might not be any natural way to prevent the generation of sentences like (22b) under



this analysis. Still, it appears that such an analysis would be able to account for a wider range of sentences than any of the previous analyses, and for that reason should merit further investigation.

## NOTES

<sup>1</sup> See the discussion of Lakoff and Peters in "Phrasal Conjunction and Symmetric Predicates", pp. 114-119 for evidence that rules such as (1c) and (1d) are necessary.

<sup>2</sup> See Dougherty's discussion of these features for more detail, pp. 869-873.

<sup>3</sup> Although this transformation is formulated to move the quantifier only around the auxiliary, Dougherty recognizes that it should be formulated to move the quantifier even further to the right. However, he states that he doesn't know how to formulate the transformation so that it will describe all the positions the quantifier could be moved because there are too many factors involved. Nonetheless, in his example, he does move quantifiers further to the right than his formulation of this transformation would allow. And in those sections of this paper where I criticize this particular transformation, I have in mind a formulation necessary to account for Dougherty's examples--not the limited one formulated here. This sounds like an unusual way for me to proceed, but it seems to be justifiable.

<sup>4</sup> In order to account for the ungrammaticality of sentences like the following,

(a) \*John, Bill and Tom thought that Mary had stopped seeing each other.

(b) \*The crooks thought that the police had arrested each other.

he suggests that "the QM Transformation is constrained to move the each only within a simple sentence." (p. 885).

<sup>5</sup> Credit for the ideas developed around (20)-(22) is due to Dougherty, p. 862.

<sup>6</sup> See "On So-Called 'Pronouns' in English", by Paul Postal in Modern Studies in English, pp. 201-224.

<sup>7</sup> "Rules for English Pronominalization", Modern Studies in English, p. 148.

<sup>8</sup> I am indebted to Jerry Morgan for this observation.

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# RESTRICTIVE RELATIVES WITH GENERIC HEADS-ARE THEY 'IFS'?

Yael Ziv

In this paper I will try to investigate the semantic, syntactic and logical affinity between sentences with relative clauses (mostly extraposed ones) that modify generic NP, and conditional if sentences.<sup>1,2</sup> Once such an affinity is observed transformational-generative-grammarians attempt to represent it formally, either by claiming that the two structures share a common underlying representation in which case they may be either derived from one another or else may both originate from a third, more abstract representation, or, if the common underlying representation explanation fails for some major syntactic reason, by claiming that both sentences may have the same entailment or a common "invited inference". I will not be interested here in how this affinity is to be represented formally; I will concentrate on the nature of the affinity itself. Whatever the formal representation turns out to be, it will have to take into account all the aspects of this affinity.

Sentences where the generic NP serves as the head of a restrictive relative clause (usually extraposed) exemplify the same type of semantic relations between the relative clause and the matrix sentence as conditional if sentences between the antecedent and the consequent.<sup>3</sup> These semantic relations are of two types;

- a. cause and effect or cause and result.
- b. given information or assumption and deduction or conclusion.

As an example of the first type consider:

1. A man is happy who marries three wives.

The relative clause in 1 specifies the condition under which the content of the matrix sentence will hold true. Hence the relative clause serves as the cause while the matrix sentence exemplifies the effect or the result. A man is happy, because he marries three wives; marrying three wives is the reason for his happiness. Note that this is precisely the case in 2 which is synonymous with 1.

2. If a man marries three wives (then) he is happy.

Sentences 3 and 4 will exemplify the second type of semantic relation.

3a. Students are rich, who spend a lot of money on girls.  
 Here it would be stupid to think that as a result of their spending a lot of money the students are rich. If anything the opposite would be true; they will get poor if they spend too much money. What we have here is a case where the relative clause serves as an assumption or designates a given piece of information on the basis of which the conclusion in the matrix sentence is drawn by the speaker. Hence, the speaker concludes from the fact that the students spend a lot of money on girls, which he either assumes or knows to be true, that it must be the case that they are rich. This type of deductive relation also characterizes sentence 4a which is synonymous with 3a.

4a. If students spend a lot of money on girls (then) they are rich. This deductive relation becomes more explicit once the modal must is introduced.

3b. Students must be rich, who spend a lot of money on girls.

4b. If students spend a lot of money on girls (then) they must be rich.<sup>4</sup> It seems to me that there is more than a mere co-incidence in the fact that both if conditionals and sentences with generic NP's modified by a restrictive relative clause exemplify these two types of semantic characteristics. If this is indeed not a co-incidence then we may suspect that there is a semantic affinity between sentences with restrictive relative clauses modifying a generic NP and conditional if sentences. Following are some more examples of both types of relations. First: the cause-effect relation.

5a. A person should do a lot for the students who wants to be elected in this State.

b. If a person wants to be elected in this state he should do a lot for the students.

6a. Workers should budget their time who want to be efficient.

b. If workers want to be efficient they should budget their time.

7a. A freshman cannot pass all his courses who goes to bars instead of classes.

b. If a freshman goes to bars instead of classes, he cannot pass all his courses.

8a. In those days a man was considered lucky who loved his wife.

b. In those days if a man loved his wife then he was considered lucky.

9a. A woman is beautiful who is in love.

b. If a woman is in love (then) she is beautiful.

10a. A person has a lot to learn who comes from an under-developed country.

b. If a person comes from an under-developed country, (then) he has a lot to learn.

The following sentences exemplify the deductive type relation.

11a. A person is very strong who can lift such heavy weights.

b. If a person lifts such heavy weights, then he <sup>is</sup> must be very strong.

It is not because he lifts such weights that he is strong, lifting the weights is just a "symptom" of his being strong. On the basis of this symptom you conclude that he is strong.

12a. A girl <sup>is</sup> must be fat, who wears a size 16 dress.

b. If a girl wears a size 16 dress, then she <sup>is</sup> must be fat.

13a. People are intelligent who can read Chaucer.

b. If people can read Chaucer, then they are intelligent.

14a. Women must be good-looking who are invited to many parties.

b. If women are invited to many parties, then they must be good-looking.

15a. A child is kind-hearted who helps an old woman carry her bags.

b. If a child helps an old woman carry her bags, then he is kind-hearted.

Note that there are cases where both semantic relations may co-exist. The sentence may, therefore, be ambiguous between these two readings.

16a. A professor <sup>is</sup> must be very well known who teaches in their department.

b. If a professor teaches in this department, then he must be very well-known.

In this sentence the cause-effect relation exists side by side with the deductive relation.

cause and effect: as a result of his teaching in their department, the professor becomes very well known.

deductive: If he teaches in their department we deduce that he is well known (may be for other reasons); since the department requires that all its professors be well-known when they start teaching there.

A remark by a student of linguistics who was asked to express his opinion about extraposed relative clauses that modified generic NP's, as well as a sentence uttered by a naïve speaker upon hearing such a sentence, may constitute additional evidence for the intuitive semantic relation between sentences with extraposed relative clauses modifying generic NP's and if conditional sentences.

One of my informants remarked that the only way he could understand the sentences with the extraposed relative clauses modifying generic NP's is by conscious "reconstruction" or "recovery" of the conditional sentences that paraphrase them. Another naïve informant, actually produced the corresponding conditional sentence once trying to correct my sentence and another time trying to understand a more complex sentence.

For me, as for some other speakers I have consulted, the extraposed relative clauses exemplify this semantic affinity to conditional sentences more overtly than non-extraposed relative clauses do. Consider:

- 17a. <sup>A</sup><sub>The</sub> girl eats a lot who does not care about her diet.  
 b. <sup>A</sup><sub>The</sub> girl who does not care about her diet, eats a lot.

In 17a both the definite and the indefinite noun phrase would function as generic and the relative clause would exemplify both the cause-effect and the deductive relation to the matrix sentence. In 17b, however, the head NP can be taken as a specific reference more readily than the one in 17a.<sup>5</sup> The relative clause in 17b restricts the domain of the head NP or specifies it more rigidly, but does not seem to overtly imply a conditional relation as the relative clause in 17a does. At the best 17b will be ambiguous between a generic head NP with the relative clause functioning as a conditional, and a specific head NP with the relative clause having an attributive or descriptive function. It is due to this ambiguity and the lack of overt exemplification of the conditional relation in the non-extraposed



relative clause versions, that I have elaborated on this semantic characteristics with respect to extraposed relative clauses.

Following are some other sentences which exemplify the conditional relation more overtly when they are extraposed. (the a version).

- 18a. Nobody can beat this man in chess, who is not skillful.
- b. ~~Anybody~~ <sup>Somebody</sup> who is not skillful cannot beat this man in chess.
- c. Nobody who is not skillful can beat this man in chess.
- 19a. Nothing can hurt her which is done in good taste.
- b. Nothing which is done in good taste can hurt her.
- c. ~~Something~~ <sup>Anything</sup> which is done in good taste cannot hurt her.
- 20a. Anyone can get the job who has a little influence on

the boss.

- b. Anyone who has a little influence on the boss can get the job.

21a. Every person can run a mile in 3.30 minutes who practices a lot.

- b. Every person who practices a lot can run a mile in 3.30 minutes.

22a. A person cannot marry this girl who is not a gentleman.

- b. A person who is not a gentleman cannot marry this girl.

23a. Someone can do this job effectively who is well-trained.

- b. Someone who is well-trained can do this job effectively.

It would be interesting to investigate why there should be such a difference between the sentences with the extraposed and the ones with the non-extraposed relative clauses. As it appears these are not merely stylistic variations, but are instances of some 'focus' alternations.<sup>6,7</sup> The extraposed relative clause seems to be of great importance and it happens to exemplify the conditional relation, while the non-extraposed relative clause (unless heavily stressed in which case it will become of greater importance and may exemplify the conditional relation) will constitute a restrictive descriptive or attributive device without exemplifying the conditional relation. A deeper logical and semantic study will hopefully supply a principled reason for this fact.<sup>8</sup>

I will proceed to show some syntactic affinity between sentences with generic head NP modified by an extraposed relative clause



and if conditional sentences.

The first point was noticed by Kuroda (MSE) "the pivotal noun appears indefinite both in the matrix and the constituent sentences of the basic form of a relative complex sentence of this type:...the same noun appears also indefinite both in the main and subordinate clauses of the basic form of the if - sentence that paraphrases the relative complex sentence." This, he concludes, is not direct consequence of the synonymy of these sentences. However, Kuroda admits that "This would not be sufficient evidence to draw a conclusion that relative complex sentences of the type in question must be syntactically related to if - sentences." If, however, we combine this argument with another one, it may be more convincing.

For some speakers sentences like

24a. The girl is lucky who owns all the jewelry she wants.

with a definite head NP tend to be "less generic" than the corresponding sentence with an indefinite head NP

24b. A girl is lucky who owns all the jewelry she wants.

For them the definite article renders the sentence more specific.

This may be related to the fact that with the conditional if- sentences this is precisely the case.

24c. If a girl has all the jewelry she wants, then she is lucky.

24d. If the girl has all the jewelry she wants, then she is lucky.

24c with the indefinite article has a generic meaning. 24d, with the definite article has only the specific reading.

Let us turn to another argument in favor of the syntactic affinity. This argument concerns the co-occurrence of tenses in both structures. To express 'general truth' present tense is used in both sentences and in both in their two parts.

25a. If a man eats too much he gets fat.

b. A man gets fat who eats too much.

26a. If a bank checks your cash on time, it is efficient.

b. A bank is efficient which checks your cash on time.

'general truth' in the past

27a. In those days women were popular who could play the piano.

b. In those days if women could play the piano, they were popular.

28a. In the last ten years teachers were fired who had affairs

with their students.

28b. In the last ten years if teachers had affairs with their students they were fired.

29a. A person had to do without any luxuries, who lived in London during the war.

b. If a person lived in London during the war, he had to do without any luxuries.

future - real condition

30a. If a student works hard all the semester he will successfully pass all his courses.

b. A student will successfully pass all his courses, who works hard all the semester.

31a. In our factory if a worker does not fulfil his job, he will get fired.

b. In our factory a worker will get fired who does not fulfil his job.

present hypothetical condition

32a. If a student did not study chemistry in high school, he would not pass the entrance examination to this college.

b. A student would not pass the entrance examinations to this college who did not study chemistry in high school.

33a. If a baby did not get enough attention, he would cry from dawn to dusk.

b. A baby would cry from dawn to dusk who did not get enough attention.

Past condition and counterfactuals.

34a. If a woman had been more careful of her health, she would not have become old so early.

b. A woman would not have become old so early, who had been more careful of her health.

35a. If a person had been threatened with a gun, he would have revealed all the secrets he knows.

b. A person would have revealed all the secrets he knows, who had been threatened with a gun.

36a. If a man could get pregnant he would have had less problems understanding women.

36b. A man would have had less problems understanding women, who could get pregnant.<sup>9</sup>

37a. If a child had been to Mars, he would have had wings.

b. A child would have had wings who had been to Mars.

38a. If people had known about the pill earlier, they would have enjoyed life a lot more.

b. People would have enjoyed life a lot more, who had known about the pill earlier.

It would be highly unlikely to consider this co-occurrence of tenses as a coincidence; there must be some principled syntactic or semantic reason for it.<sup>10</sup>

In what follows I will try to show that not only are the structures under discussion semantically and syntactically close, but they exemplify the same logical presuppositions.

Jerry Morgan claimed (personal communication) that for him the counterfactual conditionals (if) differed from the extraposed relative clauses sentences with regard to the presuppositions they made. So for him

39a. If a man had been to Mars he would have had wings.  
would not presuppose the existence of any such individual for whom the condition holds true, while

39b. A man would have had wings who had been to Mars.  
would presuppose the existence of such an individual.

For me, as for some other speakers with whom I have discussed this problem there is no presupposition of such an existence in any of the two sentences. (For G. Green both 39a and 39b would presuppose non-existence). Furthermore, for me even the following

39c. The man would have had wings who had been to Mars.  
has a reading (in addition to the more specific one) where it does not necessarily presuppose such an existence. (This is impossible for Morgan and questionable for Green). It is a hypothetical statement and only if such a man as fulfils the condition existed, he would have wings. The sentence, however, is felicitous even if no such man is known or is presupposed to exist.

It turns out that my judgements are not so peculiar. Z. Vendler expresses

roughly the same opinion, if I understand him correctly. In Adjectives and Nominalizations (pp. 24-25) he argues that sentence (32) (his no.)

(32) Snakes that are poisonous are dangerous.

is inadequately paraphrased as:

(33) Snakes are poisonous and snakes are dangerous.

since while (32) is true, both parts of (33) are false, and the following conditional sentence

If a snake is poisonous then it is dangerous.

would be a true paraphrase of (32) or actually of

A snake that is poisonous is dangerous.

He concludes that the fact that (32) does not have the paraphrase

Some snakes are poisonous and the ones that are poisonous are dangerous.

means that: while sentences containing identifying clauses do have "existential import" those containing non-identifying ones need not have.

Hence the sentence:

Girls that have a perfect score get the prize.

does not have the paraphrase:

Some girls have a perfect score and they get the prize.

but rather, the conditional works here again:

If a girls has a perfect score she gets the prize.

Note that following Z. Vendler both the plural indefinite and the singular indefinite nouns which function as generic have no necessary presupposition of existence. It may be argued against me that the definite article in this function does have a presupposed existence associated with it.

(As, in fact, Georgia Green and Jerry Morgan might claim (see (53c)).

Z. Vendler makes it clear that this is not the case; the definite NP in the generic sense must not necessarily presuppose any existence.

In "Singular Terms" Vendler supplies a formal test for generic versus singular terms. A crucial claim of his is that the definite article is always a function of a restrictive relative clause attached to the noun. With respect to his sentence (24).

(24) Mary is a demanding girl. The man she loves must be generous.

he claims that "the restrictive clause cannot be derived from a previous sentence containing the noun man. Consequently, "he says," the man will be generic unless a statement to the effect that Mary, in fact, loves



a man is presupposed." Vendler continues to draw the moral of the example; "a phrase of the type the N is singular term if its occurrence is preceded by an actual or presupposed sentence of a certain kind in which N occurs, in the same discourse...Accordingly, to take an occurrence of the N-phrase to be a singular term is to assume the existence of such a sentence." (where the existence is asserted or presupposed). Note that in the generic sense there need not be any presupposition about the existence of an individual or a thing, whether the generic NP is definite or indefinite. In Vendler's (24) there is no necessary presupposition about the existence of any individual such that Mary loves him. It is true that Vendler's discussion does not deal explicitly with the counterfactuals, but if Vendler had believed that the counterfactuals differed crucially from all other sentence-patterns with respect to the semantic and logical use of the generics in embodying a necessary presupposition of existence, he would have stated it in his discussion of the generics and their semantic and logical structure. (Is the absence of such a statement revealing, or did he just fail to notice some difference?). As I have already mentioned, for me the NP's with the definite article (as in 39c) need not have any presupposition about existence in the generic sense; in some cases, it is true, I get an ambiguity between a generic and a specific reading when the head noun is definite. It is in the specific reading that the existence is presupposed.

Another argument which might be raised against my claims concerns the extraposed relative clause versus its non-extraposed counterpart, with respect to their semantic, syntactic and logical characteristics. In some cases it seems that the causal and conditional relations that were pointed out here hold whether or not the relative clause is extraposed. Hence, it will not be a characteristic of extraposed relative clauses only, but rather a more general characteristic of some subset of all restrictive relative clauses. (whether or not they are extraposed). As I have already mentioned, for me, as for some of my informants, most, if not all, non-extraposed restrictive relative clauses may be ambiguous between a generic and a specific meaning, while the extraposed relative clauses do not have this ambiguity; they are, for the most part,



unambiguously generic. That is why I have dealt almost exclusively with the logical properties of the extraposed relative clauses with a generic head NP. I have no idea why it should be the case that the extraposed and non-extraposed relative clauses differ in this respect. An impressionistic explanation may attempt to account for it in terms of the 'wholeness' or 'identity' of the NP. When it is not extraposed the relative clause is more readily taken to be a restricting, delimiting yet integral part of the 'identity' of the NP. In the case of generics it restricts the class or the domain of the NP rather than provides a condition for the truth of the whole statement; so that it no longer characterizes the whole genus and hence may be thought of as less generic and more specific. This is not the case with the extraposed relative clause. The NP appears to designate the genus as a whole, provided it fulfils some condition specified in the relative clause. The placement of the relative clause at the end of the sentence emphasizes the condition under which the whole statement will hold true.

A far deeper investigation of the points I have mentioned here, together with overall linguistic and theoretical considerations will hopefully shed more light on these intriguing questions. If this paper encourages further research (whether to disprove, re-evaluate or support my claims and the facts I have mentioned) I will consider it a valuable achievement.

#### NOTES

<sup>1</sup>I am indebted to Georgia M. Green for her sincere effort to help me refine my non-native intuitions as well as for listening patiently to my nebulous ideas time and again. Her enlightening suggestions greatly encouraged me. She is, of course, not responsible for any faults in this paper. I would also like to thank Rina Gal-Shapira, Roberta Stock and Avraham Ziv who listened carefully to my argumentations and were frequently tortured by my impossible sentences.

I believe it is appropriate to note here that this is a part of a larger paper I have worked on entitled "Relative Clause Extraposition - Some Observations".

<sup>2</sup>It will become clear in the course of this paper that the extraposed relative clauses exemplify this affinity in a more explicit way than the non-extraposed ones.

<sup>3</sup>Kuroda and Z. Vendler have, independently, observed that there is some kind of relation between these two structures. Kuroda calls this relation premise-conclusion. In "English Relativization and Certain Related Problems" (MSE) Kuroda says (p. 283-4), "The two propositions represented by (134) and (133) are related in (29). (133) Something pleased John.  
(134) Something surprised Mary.

(29) Anything which surprised Mary pleased John.  
by the premise-conclusion relationship, and the need for the formation of a complex sentence is rooted essentially in the logical nature of the proposition to be expressed by (29). This need is fulfilled in (29) by the syntactic device of relativization. However, relativization is not a unique device for this purpose; nor is it the primary one, either. Indeed relativization can be used to combine a premise and conclusion only if they happen to contain the same noun, as Pro, in (133) and (134). A more general way to combine a premise and a conclusion is conjoining them by means of the conjunction if." Kuroda claims (fn. 18) that the paraphrastic relation between (29) and (135) "anything pleased John if it surprised Mary." may suggest that one is derived from the other. ((29) from (135)).

<sup>4</sup>Note that sentences that exemplify the deductive relation have so to say a "reversed" cause - result relation. Therefore 3a does not exemplify the regular cause-result relation. The students are not rich because they spend a lot of money but rather the opposite is true; it is because they are rich that they can spend that much money. Likewise with 11a (following) 11a. A person is very strong who can lift such heavy weights. Here the regular cause-effect is not necessarily correct, however, the "reversed" condition holds true: if a person is very strong then he can lift such heavy weights. It is because of his strength that he can lift the weights. I suspect that it is the truth of this "reversed" condition which helps or even determines the deductive relation. Hence the speaker deduces that a person is very strong who lifts the heavy weights, since he knows that only if someone is very strong can he lift the heavy weights.

<sup>5</sup>Admittedly, though, the head NP in both 17a and 17b may be interpreted as generic. With the definite head noun it is more difficult to get a generic meaning in 17b than in 17a.

<sup>6</sup>In "Some Observations on Indirect Objects - Perceptual or Grammatical Phenomena?" (LSA 1972) Ben Schapiro speaks about the "regularity of the distribution of the given and the new or presupposed and focused information in a sentence." He claims that "every sentence has a focus or new part which in the unmarked case comes at the end of the sentence. In addition most sentences have a given or presupposed part which precedes the new part." Even though terms like 'focus', 'new information' are not yet explicitly defined, this observation strikes me as relevant and basically true.

<sup>7</sup>I believe that the extraposition of relative clauses is not an optional transformation; it is motivated by a specific context. An extraposed relative clause could be either an afterthought or an instance of a special emphasis, the focus of a new and/or crucial information. Hence, in some cases the non-extraposed relative clause would be inappropriate, whereas in some other cases the opposite may be true and the extraposed relative clause would be inappropriate. As an example consider the following (non-generic) example which was taken from G. Green and J. Morgan's

"A Guide to The Study of Syntax" p. 20).

I. A man who has three ears just came in.

II. A man just came in who has three ears.

The non-extraposed sentence (I) would be appropriate in expressing the idea that someone (who has a certain property) just came in. The second sentence with the extraposed relative clause would be appropriate in expressing a surprise at the oddity of the man's property unless we stress the non-extraposed relative clause in it. The effect of the stressed relative clause would resemble the effect of its extraposed counterpart, both will convey the necessary emphasis on the relative clause. (Usually the heaviest stress falls towards the end of the sentence and hence the effect of extraposition is emphasis.) This way the extraposed relative clause and the non-extraposed stressed relative clause and the non-extraposed stressed relative clause will both fulfil about the same function.

<sup>8</sup> Following are some interesting cases exemplifying the nature of the conditional relation in sentences with extraposed relative clauses modifying a generic head noun phrase.

(I) <sup>A</sup> The man is happy who is a shoemaker.

???(II) <sup>A</sup> The boy is handsome who is a musician.

In sentence (I) we have a logical relation for the man's happiness. In (II), however, the conditional relation strikes us as invalid. There is no established logical relation between someone's being a musician and his being handsome, the sentence is therefore questionable. Note that it cannot be any purely syntactic factor which renders the sentence questionable, since (I), which is fine, is of exactly the same syntactic form. Note however that

(III) <sup>A</sup> The boy is handsome who is a musician in this band.

is fine. There is no "false" reasoning here. It could be the case that in the generic sense, the band requires that all its musicians be handsome and hence the sentence would exemplify the deductive relation; if it is known or assumed that he belongs to this specific band, the conclusion is that he must be handsome.

Consider: (IV) A man was never born who could run a hundred miles an hour.

The corresponding conditional sentence sounds extremely strange.

??(V) If a man could run a hundred miles an hour, then he was never born. We rather understand (IV) as the following conditional sentence (VI).

(VI) If something could run a hundred miles an hour, it would not be a man.

or: If there exists something which fulfils the condition (of running a hundred miles an hour), it is not a man, since no man with such a quality was ever born, and hence no such man ever existed.

<sup>9</sup> With the indefinite nouns in the plural when they are used as the head NP in the counterfactuals I get the feeling that the extraposed relative clause version is almost like the non-extraposed version, in that it does not explicitly express the conditional; it is more of a descriptive attributive, which restricts the range of the head NP.



10 Likewise the impossibility of the a sentences with the tenses in the two clauses "reversed" (in the cases of the real -future condition, the present hypothetical condition and the past condition) mirrors the impossibility of the corresponding b sentences, with such "reversed" tenses.

\*30'a If a student will work hard all the semester, he successfully passes all his courses.

(Peter Cole informed me that at least in some dialects, including his, will, would, cannot occur with if in the same clause.)

\*30'b A student successfully passes all his courses, who will work hard all the semester.

(The sentence is starred as an instance of a conditional statement.)

\*32'a If a student would not study chemistry in high school, he did not pass the entrance examination to this college

\*32'b A student did not pass the entrance examination to this college, who would not study chemistry in high school.

(Here too, the sentence is starred as an instance of a conditional.)

\*33'a If a baby would not get enough attention, he cried from dawn to dusk.

\*33'b A baby cried from dawn to dusk who would not get enough attention.

\*34'a If a woman would have been more careful of her health, she had not become old so early.

\*34'b A woman had not become old so early, who would have been more careful of her health.

\*36'a If a man would have been able to get pregnant, he had had less problems understanding women.

\*36'b A man had had less problems understanding women, who would have been able to get pregnant.

(The sentence is starred as an instance of extraposed, conditional relative.)

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(WORKING PAPERS)

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Edited by  
**Braj B. Kachru**

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## PREFACE

This special volume of *Studies in the Linguistic Sciences* includes eight papers presenting the ongoing research on South Asian languages and linguistics in the Department of Linguistics, University of Illinois at Urbana-Champaign. An earlier issue of *SLS* (Volume 1, Number 2, Fall, 1971) was devoted to papers on Hindi syntax. This volume again focuses primarily on Hindi-Urdu with five papers on various linguistic aspects of that language. In addition, there is one paper each on Burmese, Pali, and Sanskrit. We have also included a bibliography of work done in this department on South Asian languages and linguistics.

We would like to take this opportunity to thank the College of Liberal Arts and Sciences and the School of Humanities for their subsidy for this volume; and Sue Dennis, Jean Rodgers and Jo Wilcock for their valuable help in the production of the volume.

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Fall 1973





## ON THE SCOPE OF NEGATION IN HINDI\*

Tej K. Bhatia

### 0. INTRODUCTION

The topic of negation has interested logicians and philosophers both in the East and the West, in modern as well as ancient times. Negation has been a favorite topic for extensive and insightful discussions in various Indian schools of philosophy and logic such as the Naivayika, the Vaiśeṣika, the Buddhist and the Jain (See Bhattacharya, 1965). In these schools of thought, interesting questions such as what negation is, the reality of negation, negation as a mental phenomenon, etc., have been discussed with great curiosity and depth. Also, in the West, much attention has been focused on this topic in the fields of philosophy and logic. However, surprisingly enough, it failed to attract the attention of linguists and grammarians<sup>1</sup> in any serious sense until very recently. The disinterest of linguists in this topic stems probably from the apparently simple syntax of negation. It was assumed that from a given positive sentence X, a negative sentence could be derived by placing a negative particle in an appropriate position and adjusting the order of elements in the sentence, if necessary.

In modern linguistic literature, negation became an attention-catching topic following the study of Klima (1964). Further research on this topic has disclosed that the very simple surface representation of a negative sentence stems from an enormously complex semantic representation.

Negation plays an important role in linguistic theory. It is used frequently as one of the confirmatory tests to examine suggested analyses of topics such as complementation, causativization, etc. It also serves as an evaluation procedure for competing analyses. Since the domain of negation is wide, the investigation of this phenomenon requires, as a prerequisite, the careful formulation of other syntactic processes such as complementation, causativization, reflexivization, participialization, etc.

The focus of this study is mainly the scope and semantics of negation (henceforth, NEG). In contemporary linguistics, although the nature of deep structure is becoming increasingly semantics-oriented and abstract, the



treatment of the semantics of NEG has failed to account for its highly abstract behavior. The theory will greatly benefit from a competent investigation of this phenomenon, since a negative sentence demands a very abstract and semantically-oriented representation at the deep level. It has been shown in section 3 and 4 of this paper that any constituent (such as NP, adverb, post-positional phrase, or adjective) can be within the scope of NEG. While accounting for the scope of NEG it is argued that Klima's analysis, the higher verb analysis and other proposed analyses fail to account for the logical scope of NEG. Hence, a search for an analysis which could account for the logical scope of NEG at the level of deep structure continues. It is also shown that the concept of sentential and constituent NEG are based on the phonological/morphological reflexes of NEG rather than its syntactic or semantic properties. Questions such as what NEG is and under what circumstances something can be negated, and topics such as double NEG, partial NEG and negative-prefixed items, NEG raising, the position of NEG in the deep structure are outside the domain of this study.<sup>2</sup> Logically, any lexical item has correlation with (absolute) NEG. For example, any lexical item, say L, can be expressed as [+x] and [-1,2,3...n] in the lexicon. The relation of negation with the process of lexicalization is beyond the scope of this paper.

Before I discuss the scope of NEG in Hindi it may not be irrelevant to briefly review the treatment of NEG in the linguistic literature, both in Hindi and English.

0.1. In the earlier transformational framework, NEG was treated as a transformation. Chomsky in Syntactic Structures derives a negative sentence with not from its corresponding underlying positive sentence. the first detailed and extensive study on NEG in English presented by Klima (1964) introduces NEG in the deep structure. Klima's historic article presented the most complete syntactic analysis of NEG ever attempted. He did not incorporate the semantics of NEG in his work. However, Carden (1967) and Lakoff (1969) attempted to describe the semantics of NEG. Constructions with 'Double Negation' were discussed in detail by Baker (1970). In the latest work on NEG from MIT, Lasnik (1972) noted the





shortcomings of earlier works and attempted to develop a unified theory of NEG by developing the insights presented by the syntax-oriented work of Klima and the semantics-oriented works of Lakoff and others. In this work, Lasnik presents the interaction of the scope of NEG with some quantifiers and adverbs. However, he has not extended his analysis to other elements of the sentence such as prepositional phrases, modifiers, etc. He presents two theories--DET-THEORY and PRE-S THEORY--to account for the scope of NEG in a sentence and concludes that PRE-S THEORY is more powerful than DET-THEORY. However, he does admit that 'there is no natural way that the scope of Not can be determined in the deep structure within Pre-S analysis' (Lasnik, 1972:66). This shows the shortcomings of existing analyses.

0.2. The earlier research on Hindi on this topic can be grouped under two headings: In the first group we have description of NEG in traditional grammars. In the second group we have modern linguistic descriptions. In Greaves (1933)<sup>3</sup>, Kellog (1938)<sup>4</sup>, Scholberg (1940)<sup>5</sup>, Guru (1952) and Sharma (1958) NEG has not been treated in any detail and no insightful observations have been made. Some examples of negatives, however, are given while discussing voice and verbs. In Sharma's grammar, there are only two places where NEG is mentioned. While discussing Imperatives (p. 63) he points out that NEG particles ne and met are used in imperatives. In his chapter on Syntax, there is only one sentence about NEG: 'A negative sentence with terminate present may denote unwillingness, refusal, etc.' (Sharma, 1958:124).

Bahl's grammar (1968) is based on some selected topics of Hindi grammar. Unfortunately, NEG is not one of them. While discussing participle phrases, verbs and compound verbs, negative sentences are never brought into view. Thus, questions such as whether or not the operator is dropped in negative sentences are not discussed in these grammars.

In short, in the traditional grammars of Hindi, only the following two points about NEG have been discussed: First the distribution of NEG-particle under adverbs or imperatives; second of hε-deletion (as an Aux and/or Copula).



In a recent description of Hindi, Kachru (1966) presents a linguistic description of NEG. In Kachru (1966) she has discussed the process of deriving negative sentences and has shown the relationship between the NEG-particle and other constituents of S in the transformational-generative framework. She points out that the choice of negative element results in the deletion of Aux and operator at the surface level. In Kachru (1966:106-7) she noted that some derived participial phrases can not be negated.

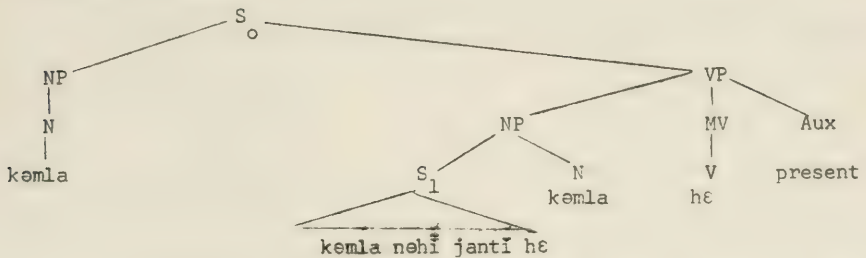
J. Singh (1968) begins with the description of negative prefixes at the morphological level. At the syntactic level, preverbal and post verbal occurrence of NEG-particle and NEG in coordinate sentences are discussed with various examples. The section on 'Negation of Specific Elements' includes the process of negating derived participle phrases. This description is mainly presented in what is generally termed the structural framework.

Sahay's paper (1969) (in Hindi) does not incorporate the insights presented by J. Singh. Not only is the analysis presented superficial, but the data is wrong and the examples incomplete. Sahay begins his paper with a discussion of the distribution of NEG-particles which has already been presented in traditional grammars (for example, in Sharma's grammar). The most confusing part of this study is the use of wrong data and incomplete examples which do not account for the intuitions of native speakers. He claims that participle phrases can be negated and gives the examples na karte hue 'NEG doing', na khate hue 'NEG eating', but one cannot say: \*meñ na khate hue perh raha tha. Similarly he says V + kor - type phrases can appear with NEG-particle na; however, he does not admit that they are not the negatives of the corresponding positive phrases.

I. Singh's (1970) is the latest available paper on this topic. Although this paper adopts the transformational-generative framework, his analysis is far from satisfactory. He presents a very sketchy description of sentential NEG, Negative Nominalization and Double NEG. In the section 'Negative Nominalization' he tries to derive NEG-prefixed items such as onjan 'ignorant' from an S x nehi janta. For example, the sentence



kəmla ənjan hɛ 'Kalma is ignorant' is derived from the following structure (p. 39).



This analysis has the following problems: First, no motivation has been presented for the above deep structure. Second, the process of the lexicalization (ənjan 'ignorant') has been left unaccounted for. Third, how two occurrences of kəmla are deleted is left unexplained. Fourth, how pronominalization and reflexivization are to be blocked is not discussed. In short, his analysis is not plausible. Furthermore, no motivation has been presented for the derivation of ənjan from an embedded  $S_1$ .

#### 1.0. NEG-PARTICLES AND THEIR EFFECTS ON THE SURFACE FORM OF AN S.

Before starting the discussion on the scope of NEG in a simple sentence, I would like to discuss Hindi NEG-particles and their distribution at the level of surface structure since these negative particles have been used in the examples discussed in this paper.

At the level of surface structure, three negative particles can appear in preverbal position in a negative sentence. nəhī is the representative NEG-particle. The other two NEG-particles appear in specific environments. mət appears with the imperative form of a verb, whereas nə shows up in imperative optative, participial, gerundive and conjoined constructions.

The choice of the negative element has the following effects on the surface form of sentences.

- i. The NEG-particle occurs between the predicate complement and V-hona 'to be', e.g.,

1(a) vɛh əccha admī hɛ.

he good man is

He is a good man.





(b) voh eccha admī nehī hē.

He is not a good man.

- ii. An optional rule, which deletes the Aux 'hē' following the aspect markers -t, -a and roh-operates in the negative sentences.

2(a) voh jata hē.

he go Aux

He goes.

(b) voh nehī jata

he NEG go

He does not go.

- iii. If a compound verb has two elements, main verb and operator (the main verb is present in its uninflected stem form and the operator is inflected for number, gender and tense), then if the NEG-particle occurs, the stem of the operator is dropped and the number, gender and tense markers are attached to the stem of the main verb.

3(a) mē ne kitab pəṛh lī

I	AG	verb 'operator'
	case	stem
		'study'

I have read the book.

(b) mē ne kitab nehī pəṛhī

NEG stem + (number, gender and tense)

\*(c) mē ne kitab nehī pəṛh lī.

In 3(a) pəṛh is the stem of the infinitive form of the verb pəṛhna 'to study/read/, and lī 'took' is the operator in which /ī/ is past tense form. It is the number, gender and tense suffix /ī/ which is attached to the stem of the main verb when the NEG-particle appears in the sentence 3(b).

## 2.0. THE TERM 'SCOPE OF NEGATION'

Klima used the notion 'in construction with' to describe the scope of NEG. He attempted to account for the phenomenon of the scope of NEG by setting forth two types of NEG, namely sentential NEG and constituent NEG. In the case of sentential NEG, the sentence NEG is 'in construction with' merely the constituent members of the NP which appear in a lower-level branching of the S.



In the NEG as a higher verb analysis the scope of NEG is expressed in terms of 'command' relationship. Since in this analysis, only the sentences can be negated, the whole S which is dominated by or commanded by a NEG falls under the scope of NEG.

Lasnik (1972) employs scope to mean NEG of a particular item. In other words, when an item is being negated, it is within the scope of NEG. I will use the term 'Scope of negation' as used by Lasnik, since Klima's distinction between sentential and constituent NEG is phonologically and morphologically motivated and fails to account for the logical scope of NEG. Consider the following examples:

4(a) yeh sēty neh̃ hē.

it true not is

It is not true.

(b) yeh əsētya hē.

it neg. is

prefix

true

It is false.

According to Klima's analysis 4(a) is an example of sentential NEG while its paraphrase 4(b) is an example of constituent NEG.

### 3.0. SCOPE OF NEGATION IN THE SIMPLEX SENTENCE

As I pointed out earlier, NEG appears in preverbal position in simple sentences whether a sentence is an example of sentential NEG or phrasal NEG. This fixed position of NEG at the surface level gives rise to ambiguities in Hindi. However, any Hindi sentence can be disambiguated by the context. Consider the scope of NEG in the following simple sentences.

5) kya īshwər neh̃ hē.

Q god not is

Is there no god?

6) kya bat neh̃ huī

Q matter/ not took place

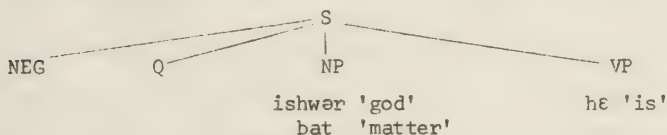
talk

Did it not happen?





The above sentences are examples of sentential NEG. In a tree structure diagram they can be represented in the following way:



3.1. Although the NEG-particle always appears in preverbal position, the scope of NEG does not remain static. It changes immediately if any other verb is substituted in the above examples. For example:

7) vəh nəhĩ aya.

he NEG come

He did not come.

8) usne kitab nəhĩ pərhĩ

he AG book NEG read  
case

He did not read the book.

In the above examples 7 and 8, the scope of NEG is limited to the VP of the S. In examples such as 8 NEG can either be limited to V or to the VP (object) of the VP. 8 can be expanded as in 8(a).

8(a) usne kitab nəhĩ pərhĩ oxar pəṛha

He did not read a book, read a newspaper

The scope is restricted to NP (object) of the VP in 8(a)

In sentences such as the following it may extend to the VP as a whole.

8(b) usne kitab nəhĩ pərhĩ, sirf petr likha

he AG book NEG read only letter wrote  
case

He did not read the book, only wrote a letter.

3.2. In adverbial constructions, NEG may cover either the whole VP, or only the adverbial phrase under its scope. Usually, in the negated sentences the latter has precedence over the former. Consider the following examples:

9) mē { roz } nəhĩ pəṛhta.  
          { həmesha }  
          { əksər }



I daily NEG study  
 always  
 often

I don't study daily/always/often.

A comparison of the above sentences with 8 shows that the presence of the adverbial phrase plays a significant role in defining the scope of NEG. In sentence 9, the verb is out of the scope of NEG whereas the adverbial phrase falls under its scope. Speakers of Hindi can paraphrase the above sentence as follows:

10) mē pəṛhta to hū lekin roz/ hamesha / aksar nehī.

I study but not daily/ always/ often.

If the verb had been covered by the scope of NEG in the paraphrase of 9 (i.e. sentence 10), it would have been impossible to delete the identical verb in the underlying second conjunct of the conjoined sentence 10.

An identical process can be noticed in the following example with a locative adverb.

11) voh ghər mē nehī pəṛhta.

he house in NEG study

He does not study at home.

Like sentence 9, sentence 11 will be understood as 'he studies but not at home'. nehī can not negate the verb in this sentence. Sentence 11 is parallel to the Hindi sentence given below:

12) voh pəṛhta hē mēger ghar mē nehī

he studies AUX but house in NEG

He studies but not at home.

When the NEG-particle appears with durative adverbs, the scope of NEG is either extended from adverbial phrase to full verb phrase or remains, as in the case of other adverbs, limited to the adverbial phrase. Consider the following example in this regard:

13) usne do ghənṭe tək kam nehī kiya

he AG two hours until work NEG did  
 case

He did not work for two hours.

Sentence 13 can be interpreted in two ways: (a) where the scope of



NEG is limited to the time adverb only; (b) where the scope of NEG covers the entire VP. Reading (a) is obvious in sentences such as (14).

- 14) usne kam to kiya perentu do ghanṭe tēk nehī  
 he AG work Emp. did but two hours until not  
 case particle

He worked but not for two hours.

Reading (b), i.e., negation of the entire VP is present in the following sentences.

- 15(a) jēb tum cēle gaye usne do ghanṭe tēk kam nehī kiya  
 after you left he AG two hours until work NEG did  
 case

After you left, he did not work for two hours.

- 15(b) usne do ghanṭe tēk kam nehī kiya, uske bad kərne lega  
 he AG two hours until work NEG did that after doing started  
 case

He did not work for two hours; after that he started doing it.

Geis (1970) suggests that negatives and adverbs are to be treated as higher verbs according to the 'abstract analysis' suggested by George Lakoff.

'In an abstract analysis in which the negation element underlying not is claimed to be a subject-embedding predicate in deep structure, all constituents referred to as being 'in the scope of' the negative are within the embedded sentence subject of negative' (Geis, 1970:5).

According to this analysis, durative adverbs in the example given below are treated in the following way.

- 16) ram ne do ghanṭe tēk tumharī tēsvīr nehī dekhī  
 ram AG two hours until yours picture NEG saw.  
 case

Ram did not look at your picture for two hours.

According to Geis the above sentence 16 is ambiguous. It can be either interpreted as 16(a) or as 16(b).

- 16(a) yēh bat nehī ki ram ne tumharī tēsvīr do ghanṭe tēk dekhī  
 It matter not that ram AG your picture two hours until saw  
 case

It is not a fact that Ram looked at your picture for two hours.

- 16(b) do ghanṭe tēk ram ne tumharī tēsvīr nehī dekhī

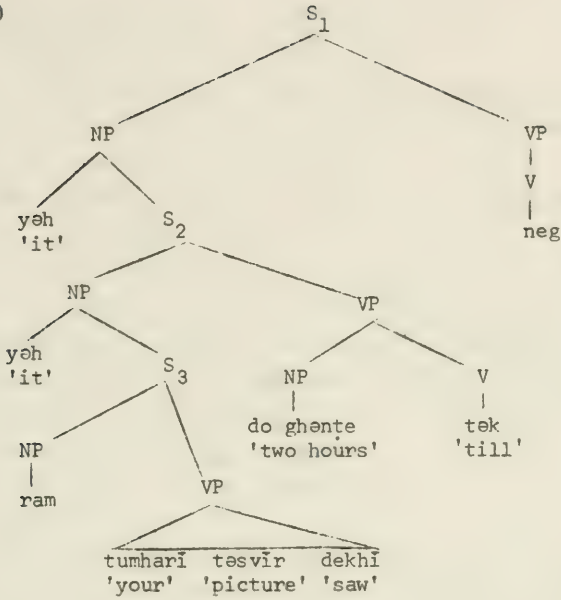
For two hours Ram did not look at your picture.

To explain this ambiguity, Geis draws tree-diagrams corresponding to 16(c) and 16(d) given below:

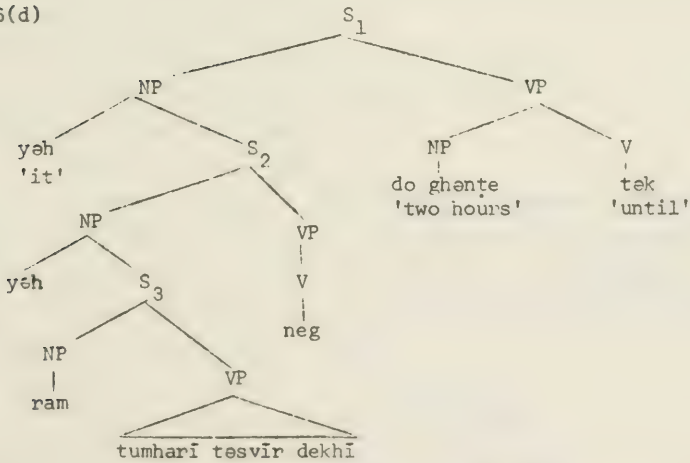




16(c)



16(d)



According to Geis, only sentences can be negated. Sentence 16 consists of two simplex sentences in which one is 16(e).



16(e) ram ne tumharī tēsivīr dekhi

Ram looked at your picture.

This can be negated as a unit. Since we cannot negate any non-sentential unit such as 'do gheṇṭe tēk', the adverbial phrase is placed out of the scope of NEG at the level of deep structure.

Another reading is obtained by negating the whole sentence, including the adverbial phrase, i.e. 16(f).

16(f) ram ne do gheṇṭe tēk tumhari tēsivīr dekhi.

In 16(f), the adverbial phrase constitutes a part of the larger sentence.

According to this analysis, the negative sentences with instrumental and manner adverbials are also ambiguous in two ways, like those with many other adverbials. Thus sentences such as 17,

17) mē ne bled se seb nehī kaṭa

I AG razor with apple NEG cut  
case blade

I did not cut the apple with a blade.

are ambiguous, having the meaning either of the NEG of the whole sentence (i.e., S with the adverbial phrase) or the sentence without the adverbial phrase in 17(a) and 17(b) respectively.

17(a) mē ne bled se seb nehī kaṭa

I did not cut the apple with a razor blade.

17(b) mē ne seb nehī kaṭa

I did not cut the apple.

However, the adverbial phrase in itself cannot be negated. Contrary to the claim of this analysis, Hindi speakers intuitively interpret this sentence as negating the adverbial only. To any native speaker of Hindi, sentence 17 means: 'The apple was cut but not with a blade.' The above sentence 17 can be paraphrased as 17(c):

17(c) mē ne seb kaṭa magar bled se nehī

I cut the apple but not with a razor blade

or by 17(d) mē ne seb bled se nehī cakū se kaṭa

I AG apple razor with NEG knife with cut

I cut the apple not with a razor blade, with a knife.

Consider another example with manner adverb:





- 18) mē ne savdhanī se dervaza nahī khola  
 I AG carefully door NEG opened  
 I did not open the door carefully.

The above sentence according to Geis has two readings:

- 18(a) mē ne dervaza nahī khola  
 I did not open the door.

or

- 18(b) mē ne savdhanī se dervaza nahī khola  
 I did not open the door carefully.

In 18, the adverb alone can not be negated. However, the native speaker of Hindi will not hesitate to substitute the following sentence for 18.

- 19) mē ne shayed esavdhanī se dervaza khola  
 I AG probably NEG prefix door opened  
 carefully

I probably opened the door carelessly.

The fact that 18 can be understood as 19 is sufficient evidence that the adverb can itself be negated. Geis' analysis provides no explanation for the fact that in 18 it is not asserted that the door was not opened; 18 asserts simply that the door was opened, but that the action was not performed in a careful manner.

The paraphrase equivalence of 18 and 19 brings out clearly the inadequacy of the proposed classification of sentential NEG and constituent NEG. Following Klima in many works, sentences such as 18 are usually cited as examples of sentential NEG and sentences with an item + negative-prefix as constituent NEG (see Klima, 1965:295, Kim, 1967:122; McGloin, 1972:1). Any grammar which treats 18 and its paraphrase 19 as distinct fails to capture the generalization and suffers from the inadequacies of PS grammars (which fail to establish a legitimate relationship between an S and its paraphrase). In short, in the linguistic literature, the distinction between sentential NEG and constituent NEG is phonologically or morphologically motivated and lacks either syntactic or semantic support. Furthermore, it fails to capture significant generalizations in the language.

The above discussion does not apply to adverbs only. An identical process can be observed when participial forms are substituted for adverbs,



as participial forms, like adverbs, fall under the scope of NEG. Consider the following sentences.

- 20) tum pita jī ko ate hī tēg met kero  
 you father obj. arriving bother NEG do  
 marker

Don't bother your father the moment he arrives.

(Notice that the phonetic shape of the NEG partical met indicates that it originates in the higher S:)

- 21) vāh pēṛh kēṛ nehī soya  
 he studied having NEG slept  
 He slept without studying.

- 22) vāh pēṛhte pēṛhte nehī soya  
 he while reading NEG slept

It was not while reading that he fell asleep.

In sentences 20, 21 and 22 the main verb is out of the scope of negation. For example, sentence 20 does not mean 'don't bother your father.' Rather it seems to imply 'you can bother your father, but don't do it the moment he arrives.' Similarly in 21 and 22, although the NEG particle appears before the verb soya 'slept', the participial forms pēṛh kēṛ 'having studied' and pēṛhte-pēṛhte 'while reading' fall within the domain of negation.

The above discussion leads us to the following conclusions: One, in Geis' framework, the participials should be treated as higher verbs as opposed to the embedding analysis of participials. However, if such an analysis is accepted, it will fail to account for the fact that the participial alone can fall within the scope of negation.

Two, if the embedding analysis of participial forms is adequate, then NEG will be treated as the higher verb of the embedded S. Such treatment will need an extra rule of NEG-raising in order to arrive at the desired surface representation. However, this treatment is not free from the shortcomings discussed above. Since NEG-raising is not applicable to factive verbs (Bhatia, 1972:43). In such instances NEG-raising results in a semantic change. However, if this rule is blocked, ill-formed sentences will be generated. Thus in any case, this proposal suffers from inadequacies. Hence Geis' analysis is descriptively inadequate and



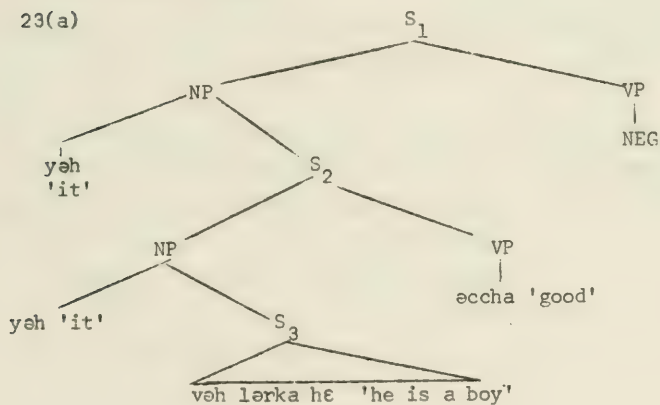
fails to account for the scope of NEG. Furthermore, its claims are counter-intuitive.

3.3. Also, Geis' treatment fails to account for the congruency of behavior between adverbs and verbs on the one hand, and adjectives and nouns on the other, with respect to the scope of NEG. In Geis' analysis, adjectives and nouns in the VP are treated like adverbs. That is why sentences 23 and 24 can be represented by 23(a) and 24(b) respectively.

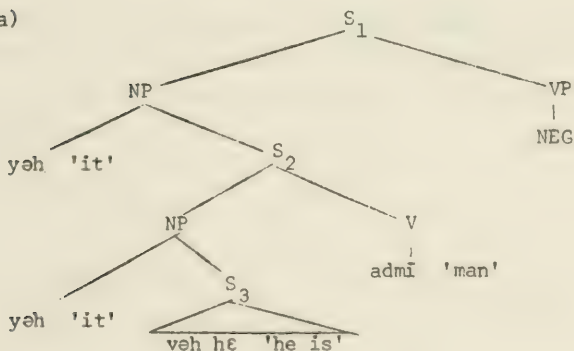
23) vəh ləṛka eccha n-hĩ hē  
       that boy     good   NEG is  
       That boy is not good.

24) vəh admī nēhĩ hē  
       he man     NEG is  
       He is not a man

23(a)



24(a)







Sentences 23 and 24 do not negate the existence of larka 'boy' and admi 'man' respectively. The native speaker of Hindi will paraphrase 23 and 24 by 23(b) and 24(b) respectively.

23(b) voh larka to he lekin accha nahĩ

he boy EMP is but good NEG

He is a boy but he is not good.

24(b) voh admi nahĩ kuch or he

he man NEG something else is

He is not a man, (he is) something else.

However, Geis' deep structure representation makes the wrong claim that both  $S_2$  and  $S_3$  come within the scope of NEG whereas we have seen that only the adjective accha 'good' and the noun admi 'man' are negated in 23 and 24 respectively. In other words, Geis' deep structure representation fails to account for the NEG of an adjective or noun and on the other hand, makes the wrong claim that  $S_3$  is within the scope of NEG.

3.4. If a postpositional phrase occurs in an S, the NEG-particle has the potential to negate either the entire postpositional phrase or merely the postposition. Examine the following:

25) kitab mez ke upar nahĩ perĩ thĩ

the book table on NEG lying was

The book was not lying on the table.

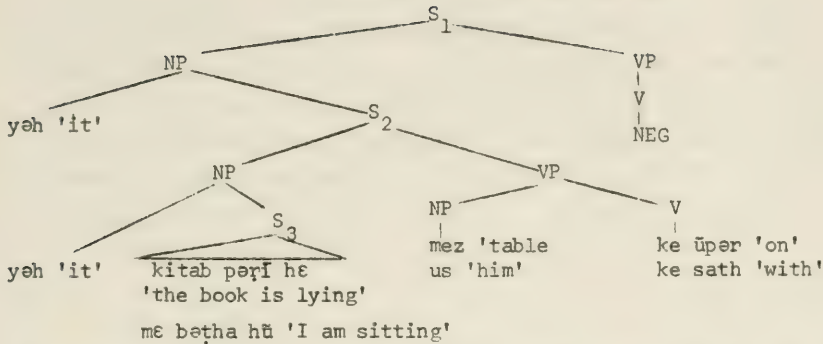
26) mĩ uske sath nahĩ beṭha

I him with NEG sat

I did not sit with him.

According to the abstract analysis, prepositions are a special sort of verb. If this analysis is extended to postpositions, it would treat them as predicates of higher sentences.<sup>6</sup> For example 25 and 26 will be represented as





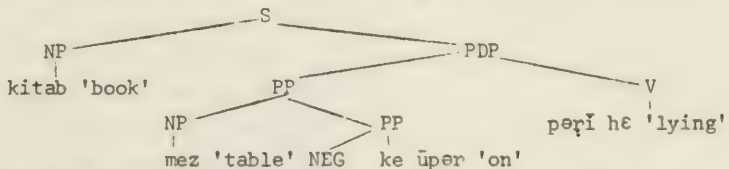
Notice that the above treatment faces two difficulties. First, the  $S_3$  such as   
 kitab pərī thī  
 mē bəṭha hū  
 should not come under the scope of NEG although NEG commands  $S_3$  according to the above analysis.

Second, the above analysis does not permit the NEG of postpositional phrases only (or their postpositions) although in one interpretation of the above examples the postpositional phrase mez ke ūper 'on the table' and us ke sath 'with him' are negated. Not only can the postpositional phrases be negated but in example 27 only the postposition can be negated. Consider the following sentence:

- 27) kitab mez ke ūper nehī nice pərī hē  
 the book table on NEG under lying is

The book is not lying on the table, but under the table.

A representation such as the following can account for such examples. It can clearly indicate the scope of NEG as understood by native speakers of Hindi. The representation of sentence 27 is given below.



This analysis can accurately account for the intuitions of the native speaker, since the native speaker will understand sentence 25 as 27. Thus





Geis' treatment of prepositions does not account for the scope of NEG in postpositional phrases satisfactorily if it is extended to it.

3.5. Verbs and nouns display a **parallel** behavior with respect to the scope of NEG when they are modified by adverbs and adjectives **respectively**. When the NP of any VP is modified by a determiner, numeral, demonstrative pronoun or adjective, the scope of NEG covers the modifier only. For example, in Hindi:

- 28) mē. {sunder  
do  
un  
ecche} larkō se nahī mila  
I {handsome  
two  
those  
good} boys with NEG met

I did not meet the handsome/two/those/the good boys.

The above sentences imply that 'I met some boys, but I did not meet the handsome/two/these/good boys.'

The scope of negation extends to the subject too. For example:

- 29) yehā koī nahī aya  
here someone NEG came  
Nobody came here.

3.6. Hindi has two emphatic particles, to and hī. I shall discuss their roles in specifying the scope of NEG below.

3.6.1. The particle to: The emphatic particle to characteristically attracts NEG to the phrase which it follows. Observe the following examples in Hindi:

- 30(a) mē ne to use khet nahī likha  
I AG EMP him letter NEG wrote  
case part  
I did not write him a letter.  
(b) mē ne use to khet nahī likha.  
I did not write him a letter.  
(c) mē ne use khet to nahī likha  
I did not write him a letter.  
(d) mē ne use khet likha to nahī  
I did not write him a letter.



Notice that sentences 30(a-d) are identical except that to follows different phrases. In 30(a) to follows subject NP mẽ 'I'. Even though the NEG-particle appears in the pre-verbal position, the verb and its object NP's are clearly outside the scope of NEG. to has an absolute potential to attract NEG to the subject NP, i.e., mẽ 'I'. The sentence will be interpreted in the following manner.

3(e) kisi ne use khēt likha mē ne nōhī  
 someone AG him letter wrote I AG NEG  
 case case

Someone wrote him a letter, but I did not.

Thus, the speaker knows that the action of 'writing a letter to him' was performed but it was not 'I' who performed this action. Similarly in 30(b) to restricts the scope of NEG to only the indirect object 'him'. The speaker says that he admits that he has written a letter but not to him, rather to somebody else. 30(c) indicates that khet 'letter' is under the scope of NEG and in 30(d), the scope of NEG is limited to the verb only since to follows the verb phrase.

3.6.2. The particle hī When the emphatic particle hī occurs in the negative clause the effect of NEG is neutralized. Examine the following sentences in this regard:

31) mē vāhā nēhī gəyā

I there NEG went

I did not go there.

32) mē hī vahā nehī gēva

I only there NEG went

(a) It was I who did not go there.

(b) It was not only I who went there.

31 is a negative sentence while 32 is ambiguous. The ambiguity is clear from its translations into (a) and (b). In 31 the action of 'going there' was not performed. However, in 32(b) the speaker does not intend to say so. The speaker wants to convey that the action of 'going there' was not only performed by him but by others too. Thus, 32(b) shares a common logical underlying structure with the following sentences:

33) mē hī vohā nehī gayā dūsre log vohā gaye

I EMP there NEG went other people there went



I did not go there, other people went there.

34) *mē hī nahī dūstre bhī vohā gaye*

Not only I but also others went there.

Hence, in the reading of 32(b), 32 does not function as a negative sentence. *hī* attracts NEG to it (as is clear from the surface structure of 34 and neutralizes it. However, in the other reading 32(a) where *hī* functions as *sirf* 'only/emphatic', *hī* fails to attract NEG to itself and, as a result, the scope of NEG covers VP under its scope. Thus this reading of 32(a) is negative and can be represented by the following Hindi sentence.

35) *sirf mē hī vohā nahī gayā*

only I EMP there NEG went

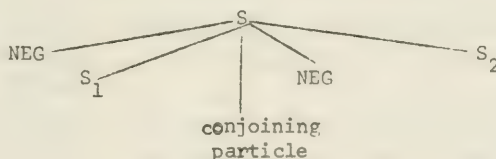
Only I did not go there.

In other words, the sentences with emphatic particles are ambiguous with a negative as well as a positive reading when the NEG-particle occurs in the surface representation. In the positive reading, NEG is attracted towards *hī* and is neutralized and in the other reading *hī* fails to attract NEG and, hence the NEG covers the VP under its scope.

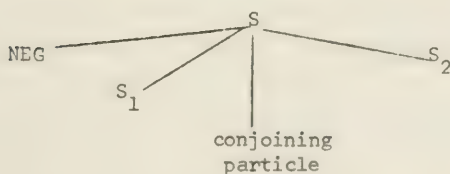
#### 4.0. SCOPE OF NEG AND CONJOINED SENTENCES

NEG in conjoined sentences can appear in structures like the following:

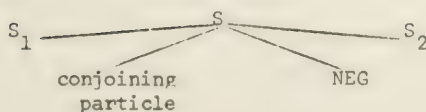
A.



B.



C.







Two NEG-particles which can appear at the surface structure level in the above structures are nēhī and nē. nē can appear only in structure A but nēhī can appear in all of the above structures. nēhī sometimes appears in the post verbal position but usually appears before the verb. nē appears usually in the pre-sentential position. Thus, these two NEG-particles can appear in different positions. This contradicts the assumption that NEG appears only in the preverbal position (as at the surface level NEG keeps moving from one place to another). Thus, the NEG placement before a verb in deep structure can neither account for the scope of NEG accurately nor will it be syntactically justified. Consider the following examples of conjoined sentences.

36) nē mē bazar gaya or nē mē ne bazar dekha

I did not go to the market nor did I see the market.

37) nē mē bazar gaya or nē mē gher gaya.<sup>7</sup>

I did not go to the market nor did I go to the house.

38) nē mē bazar gaya or nē suresh bazar gaya.

I did not go to the market nor did Suresh go to the market.

36(a) mē bazar nēhī gaya or mē ne bazar nēhī dekha

I did not go to the market and I did not see the market either.

37(a) mē bazar nēhī gaya or mē gher bhī nēhī gaya.

I did not go to the market and I did not go to the house either.

38(a) mē bazar nēhī gaya or suresh bhī bazar nēhī gaya

I did not go to the market and Suresh did not go to the market either.

In sentences 35, 36, and 37, the NEG-particle appears in the pre-sentential position. Nevertheless, the scope of NEG extends to the verb, adverb and the subject NP respectively. If the NEG-particle nēhī of the simplex sentence is selected at the surface level we get sentences 36(a), 37(a), and 38(a) respectively.

When nē is selected, the conjunct is reduced and the NEG-particle precedes the constituent or constituents it negates.

37(b) nē nē bazar gaya or nē gher.

Neither did I go to the market nor to the house.

38(b) nē mē bazar gaya or nē Suresh

Neither did I go to the market nor did Suresh.



4.1. Aspect and Negation: In coordinate structures like 40 and 41 when the NEG particle appears in the post verbal position the scope of NEG is limited either to the verb or to the aspect only. Examine the following:

- 39) *mē skūl mē pəṛhta nahī khelta hū*  
 I school in study NEG play AUX  
 I don't study in school but I play.
- 40) *mē skūl mē pəṛhta nahī mēger ab pəṛhūga*  
 I school in study NEG but now will study  
 I didn't study in school but now I will.
- \* 41) *mē skūl mē nahī pəṛhta mēger khelta hū*<sup>8</sup>  
 I don't study in school but play.
- 42) *mē skūl mē nahī pəṛhta mēger ghər mē pəṛhta hū*  
 I don't study in school but at home I do.
- \* 43) *mē skūl mē pəṛhta nahī mēger ghər mē pəṛhta hū.*  
 I don't study in school but I study at home.
- \* 44) *mē skūl mē nahī pəṛhta mēger pəṛhūga.*<sup>9</sup>
- \* 45) *mē skūl mē pəṛhta nahī khela*  
 I do not study in school but played.
- 46) *mē ne kitab pəṛhī nahī pəṛh rəha hū*  
 I did not read the book, I am reading.

In sentences 39, 40, and 46 the NEG-particle appears in the post-verbal position. The scope of NEG in sentence 39 is limited to the verb *pəṛh* 'study' only, while in sentences 40 and 46 it is limited to present and past respectively.

When the NEG-particle occurs in the post-verbal position in coordinate structures like 40 or 41 it is not possible to negate both the verb and aspect tense. That is why sentence 45 is ungrammatical.

Consider example 42 where NEG is placed in the preverbal position and its scope covers the adverb *skūl mē* 'in school', but when NEG is moved to the post-verbal position only the verb or the aspect and tense is under its scope. Adverbs in such cases fall outside its scope. That is why sentence 43 is ungrammatical. In the case of 44 the scope of NEG covers the adverb and, thus, aspect cannot be negated. Therefore, it is an ungrammatical sentence.





Thus, when the NEG-particle follows the verb the scope of NEG is either limited to the verb or to the aspect and tense of that verb. NEG cannot cover the verb and aspect and tense both under its scope in coordinate structures such as 40 and 41.

## 5.0. CONCLUSION

Although the theory of negation has undergone radical changes in recent linguistic analyses, the treatment of NEG is still far from satisfactory. I have shown that the concepts of sentential and constituent NEG are superficial and are phonologically or morphologically motivated, and thus lack syntactic or semantic motivation. I have presented some examples to demonstrate that the presence of a NEG-particle in preverbal position does not necessarily imply sentential NEG, for the following reasons:

One, the logical scope of NEG may not cover the entire sentence. Such a negativized sentence could be paraphrased using a NEG prefixed item.

Two, the proposed analysis fails to account for the ambiguity of certain negativized sentences in Hindi.

Three, in respect to certain negativized sentences, NEG is neutralized when pronounced with normal rhythm. (See examples 32-5 above.)

Four, in conjoined sentences the NEG-particle can either appear in preverbal position or in front of the phrase/item which it logically negates.

Five, certain negativized sentences could be paraphrased or translated by corresponding NEG incorporated items in English.

Six, the analyses discussed above fail to capture certain very productive generalizations in the language, e.g., the marked parallelism in negativized sentences in the behavior of modifier/adjectives and adverbs modifying nouns and verbs, respectively.

Furthermore, since the concept of sentential NEG permits only one NEG per S, it is inadequate to account for the phenomenon of 'Double NEG'. I have also demonstrated that the treatment of NEG so far not only fails to account for the logical scope of NEG but also makes misleading and counter-intuitive claims. Although, in contemporary linguistic



theory, the nature of deep structure is becoming more and more abstract and semantically oriented, and questions such as representing presuppositions at the level of deep structure are being discussed, the treatment of NEG is still a long way from achieving descriptive adequacy.

In this paper, I have attempted to demonstrate the non-static behavior of NEG in Hindi simplex and conjoined sentences. I have also shown that the appearance of NEG in the preverbal position in simplex sentences gives rise to ambiguity. In the deep structure, the so-called 'Sentential NEG' or any other analysis proposed so far, fails to account for this ambiguity since any constituent (VP, adverbs, postpositional phrase, postposition, NP, etc.) can be under the scope of NEG. Hence, the concepts of Sentential and Constituent NEG have to be discarded in favor of an analysis which can account for the logical scope of NEG in a sentence.

#### NOTES

\* I am grateful to Professor Y. Kachru and S.N. Sridhar who read an earlier version of this paper. My thanks are also due to R. Pandharipande and A.H. Siddiqui who have helped me sharpen my native speaker's intuitions about Hindi.

<sup>1</sup>Jespersen (1966) is an exceptional case. He has discussed this topic in great detail.

<sup>2</sup>For a discussion on these topics see Bhatia (1972).

<sup>3</sup>Greaves discussed negation under 'miscellaneous adverbs'. He has presented the distribution of NEG-particles, nahī, ne and met; kabhī nahī 'never' and kyō nahī 'why not' have been included in this discussion, but he does not mention NEG in his table of contents (383-4).

<sup>4</sup>Kellogg mentioned NEG at different places, for example: a) NEG-particle ne in disjunctive conjunctions, p. 39; b) distribution NEG-particles ne and met under 'The Imperatives', p. 459; c) he makes a passing remark about Aux deletion in 'Syntax of the Indefinite Imperfect', p. 464. Similarly, another remark about copula deletion in 'Of the Copula', p. 500. d) Phrases like nahī to 'otherwise' are discussed in a short paragraph, p. 534.

<sup>5</sup>Scholberg (1940) was the first to mention NEG in the table of contents. In the section of adverbs he lists a subsection 'Affirmation and Negation' but under this title he discusses only the distribution of NEG-particles. His other remark about hē deletion occurs on p. 228.



<sup>6</sup>In her paper M. Steffensen (1971:157-8) presented the following arguments for the treatment of postpositions as verbs on the basis of the Abstract Analysis suggested by G. Lakoff and adopted by J. Geis.

Both transitive verbs and postpositions have objects and exhibit co-occurrence restrictions with objects. These can be most parsimoniously stated on the postpositions and unless these surface level postpositions are posited as verbs, some explanation must be given for the fact that the same nouns are relevant in both cases.

Both verbs and postpositions undergo verb phrase and object deletion.

In the case of pronominalization of the object she does not feel that her arguments are so strong. With many adverbial objects of verbs, it could be argued that the postposition had been deleted by a late rule.

<sup>7</sup>One can also say: *nə mē bazar गया, nə ghar.*

<sup>8</sup>This sentence is acceptable if *skūl mē* 'in school' is not implied in the second conjunct.

<sup>9</sup>However, the following sentence is well-formed:

*mē skūl mē əbtək nəhī pəṛhta tha əb pəṛhūga*

I school in until now NEG used to study now will study

Until now I did not study in school, but now I will.

since the adverb *əbtək* 'until' is within the scope of NEG.

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ON THE (POSSIBLY) PRESUPPOSITIONAL NATURE OF WHEN-CLAUSES IN HINDI<sup>1</sup>

Susan Kay Donaldson

In Hindi a number of adverbial expressions have a form similar to that of relative clauses. Probably the most obvious similarity is that many adverbial clauses are introduced with a marker morphologically related to the relative marker/pronoun. The relative pronoun has the variant forms jo, jis, and jin; the introductory adverbials are also j-initial. Secondly, the main clauses of sentences both with adverbial clauses and with relative clauses are characterized by containing a word having corresponding reference to the adverb or to the relative pronoun of the dependent clause. In a sentence containing a relative clause, these two have identical reference (e.g. jo ... veh: who ... he), where as in a sentence introduced with an adverbial the two words refer not to the same entity but to the same basic perceptual category, be it temporal, spatial, or related to manner or amount (e.g. jehā ... vehā: where ... there). This main clause referent, for both relative clause and adverbial sentences, has been termed the 'correlative' marker or pronoun in the literature. The adverbial relative-correlative markers include such pairs as jeb ... teb (when ... then), jeb bhī ... teb (whenever ... then), jeb se ... teb se (since which time ... since then), jeb tek ... teb tek (until when ... until then), jese ... vese (in which way ... in that way), jese hī ... vese hī (as soon as ... then), jitna ... utna (hī) (as much as ... that much), jehā ... vehā (where ... there), jehā bhī ... vehā (wherever ... there).<sup>2</sup> In addition, such adverbial clauses nearly always occur sentence-initially, analogous to the preferred position of restrictive relative clauses. Because of such similarities, it has long been felt by Hindi grammarians that the adverbial and relative constructions are closely related in function and purpose, as well as form. In this paper, which will have more a speculative nature than a definitive one, I would like to support this hypothesis by pointing out the presuppositional aspects of one of the adverbial expressions, the jeb- (when-) clauses in correspondence to the function of restrictive relative clauses in stating a presupposition.



We might begin by defining just what it is we mean by the term presupposition, a topic that has only in the last thirty years or so begun to receive much notice from philosophers and that has only in the last decade begun to attract the attention and speculations of linguists. Questions about presupposition first began to arise with Bertrand Russell's claim that the use of a definite noun phrase in a sentence asserts the existence of that noun phrase. Thus, to use an over worked example, Russell would say that the speaker who utters (1)

(1) The present king of France is bald.

is making two assertions: first, that there exists one and only one entity such that he is the present king of France, and secondly, that that entity is bald.<sup>3</sup> This analysis was rejected by P.F. Strawson, who pointed out that while sentence (1) has significance (that is, that it has a meaning, which we are able to understand), there is a difference between reference and assertion; and the function of the noun phrase in (1), the present king of France, is not to assert its own existence, but to refer. Thus, Strawson says,

To use the sentence is not to assert, but it is ... to imply, that there is only one thing which is both of the kind specified ... and is being referred to by the speaker. It is obviously not to assert this. To refer is not to say you are referring. ... I draw the conclusion that referring to or mentioning a particular thing cannot be dissolved into any kind of assertion. To refer is not to assert, though you refer in order to go on to assert. (Strawson 1950:333; italics his)

Since if there did exist a present king of France, (1) could be used unambiguously to refer to him and to make an assertion about him (that he is bald), Strawson says that it has significance. However, because (1) fails to refer, it must simply be considered a faulty sentence and not one that is either true or false. This is the case even though (1) contains an assertion, and though philosophers and linguists in most circumstances accept the generalization that an assertion is either true or false. If the truth or falsity of a sentence, then, is dependent on some part of the sentence, that part can be said to be a presupposition of the sentence, or as A.J. Baker has put it, '...a statement asserts p and presupposes q if q must be true before p can be either true or false' (Baker 1956:371).<sup>4</sup>



A common test for presuppositions, then, is negation. If a portion of the sentence remains true or unaffected even when the sentence as a whole is negated, then it is assumed that that portion is presupposed. We can see this to be the case when we negate (1), for example:

(1)a It is not the case that the present king of France is bald.  
The meaning of this is equivalent to that of (1)b, not that of either (1)c or (1)d, as we would assume it would have to be if the definite noun phrase were actually making an assertion about the existence of some present kind of France:

(1)b The present kind of France is not bald.

c There is no present king of France.

d There is no present king of France and/or he is not bald.

In the introduction we noted that restrictive relative clauses state presupposed material. To see that this is true, we can simply apply the negation test:

(2)a jis ləṛkī ke sath mē rəhtī hū vəh rəsəyənvigyan pəṛhtī hē

'The girl who I live with studies chemistry.'

b yəh bat nəhī ki jis ləṛkī ke sath mē rəhtī hū vəh rəsəyənvigyan pəṛhtī hē

'It is not the case that the girl who I live with studies chemistry.'

The meaning of (2)b can only be (2)c, never (2)d:

(2)c jis ləṛkī ke sath mē rəhtī hū vəh rəsəyənvigyan nəhī pəṛhtī

'The girl I live with doesn't study chemistry.'

d mē ki sī ləṛkī ke sath nəhī rəhtī

'I don't live with any girl.'

If we apply the same test to past-tense jəb-clauses, we get similar results:

(3)a jəb ram ne sīta ka khilōna toṛa tēb vəh rone ləgī

'When Ram broke Sita's toy, she began to cry.'

b yəh bat nəhī ki jəb ram ne sīta ka khilōna toṛa tēb vəh rone ləgī

'It is not the case that when Ram broke Sita's toy she began to cry.'

It is the main clause which is negated in (3)b and not the jəb-clause. We get the reading of (3)c and not that of (3)d:





(3)c jeb ram ne sīta ka khilna tora teb veh rone nahī lagī

'When Ram broke Sita's toy, she didn't start to cry.'

d ram ne sīta ka khilna nahī tora

'Ram didn't break Sita's toy.'

However, (3)c is not the only meaning (3)b can have. It can also mean that the event of the main clause took place at a time other than that stated in the when-clause, as in the dialogue of (3)e:

(3)e A: jeb ram ne sīta ka khilna tor diya teb veh rone lagī

'When Ram broke Sita's toy, then she started to cry.'

B: nahī, sīta teb rone lagī jeb ram ne uske bal khīce

'No, Sita began to cry when Ram pulled her hair.'

This recognition might persuade us that jeb-clauses are not presuppositions, after all. However, note that B's speech in (3)e does not negate the contents of the jeb-clause in A's speech; that is, it is still the case that Ram broke Sita's toy. Additionally, (3)e occurs in different circumstances than does the simple (3)a; B's utterance is actually negating something like (3)f:

(3)f sīta tabhī rone lagī jeb ram ne uska khilna tora

'It was when Ram broke her toy that Sita began to cry.'

In this situation both clauses express given material. Both speaker and hearer know that Sita began to cry at some time; they are trying to determine just when that time was. One of the additional facts about Sita known to both of them is that Ram broke her toy. The function of the sentence is to link the two events and to say that they occurred simultaneously. Here, then, it seems that the jeb-clause is making an assertion about the time at which the event of the main clause occurred. If a jeb-clause can be used in this way to make an assertion it may well be that in such cases it is not a presupposition. However, this is not clear, as application of the negation test indicates that the jeb-clause still contains a presupposition. That is, if we negate (3)f, as in (3)g

(3)g yeh bat nahī ki sīta tabhī rone lagī jeb ram ne uska khilna tora

'It's not the case that it was when Ram broke her toy that Sita began to cry.'

all the material we have noted as known, given material (i.e. that Sita



began to cry some time, and that Ram broke her toy) remains true; it is simply the new material of sentence (3)f, the assertion that the two events occurred at the same time, which is negated.

As far as I have been able to determine, when-clauses in any language have not been discussed as possible candidates for presuppositional devices. However, Frege has discussed other adverbial clauses in this light and in his investigations has noted a phenomenon similar to that we have just pointed out regarding when-clauses: that at times they behave like presuppositions, at others like assertions. Concerning this dual nature of after-clauses, for example, he writes,

In the case of these sentences, various interpretations are easily possible. The sense of the sentence, 'After Schleswig-Holstein was separated from Denmark, Prussia and Austria quarrelled' can also be rendered in the form 'After the separation of Schleswig-Holstein from Denmark, Prussia and Austria quarrelled.' In this version, it is surely sufficiently clear that the sense is not to be taken as having as a part the thought that Schleswig-Holstein was once separated from Denmark, but that this is the necessary presupposition in order for the expression 'after the separation of Schleswig-Holstein from Denmark' to have any reference at all. To be sure, our sentence can also be interpreted as saying that Schleswig-Holstein was once separated from Denmark. ...In order to understand the difference more clearly, let us project ourselves into the mind of a Chinese who, having little knowledge of European history, believes it to be false that Schleswig-Holstein was ever separated from Denmark. He will take our sentence, in the first version, to be neither true nor false but will deny it to have any reference, on the ground of absence of reference for its subordinate clause. This clause would only apparently determine a time. If he interpreted our sentence in the second way, however, he would find a thought expressed in it which he would take to be false, beside a part which would be without reference for him. (Frege 1960:71)<sup>5</sup>

After-clause and when-clauses have identical functions: to pinpoint the time of occurrence of the main clause. If the material within these clauses is false and is known by both speaker and hearer to be false, or if the material is unknown to the hearer (presuppositions, after all, contain information known to both speaker and hearer), then the sentence as a whole fails to make sense: no point in real time has been designated for the occurrence of the main clause.

Strawson's criterion, as we noted on page 29, states that a presupposition is that part of a statement on which the truth or falsity of the





rest of the statement depends. We have seen that negation of the whole sentence can then provide a test for determining whether or not portions of the sentence are presupposed. Suppose, however, that rather than negating a sentence containing a when-clause, we simply delete the when-clause to see whether or not the truth of falsity of the main clause is dependent on it. In this case, it seems the rest of the sentence is not adverbial-dependent:

(3)h *sīta rone lēgī*

'Sita began to cry.'

It is true that this sentence tells us nothing of the circumstances under which Sita began to cry, but it nevertheless is the case that the truth or falsity of (3)h alone can be determined. In this analysis, if there has been any time t such that Sita began to cry then, then the sentence is true; conversely, if there has never been a time at which Sita has begun to cry (that is, if Sita has never cried), then the sentence is false. However, there is something definitely unappealing about this approach. Whenever there occurs a perfect-tense verb, such as lēgī in (3)h, we assume that the action described took place at a definite time; and if that time is not made clear from the context, we expect it to be stated explicitly in the sentence. Frege points to this when he writes, in speaking of subordinate clauses,

Almost always, it seems, we connect with the main thoughts expressed by us subsidiary thoughts which, although not expressed, are associated with our words, in accordance with psychological laws, by the hearer. And since the subsidiary thought appears to be connected with our words of its own accord, almost like the main thought itself, we want it also to be expressed. ...it may be doubtful whether the subsidiary thought belongs to the sense of the sentence or only accompanies it. (Frege 1060:75)

Thus, even though (3)h can stand by itself, it would be a most unusual utterance were it to occur outside a context specifying the time or circumstances during which the event happened. As Frege says, we want these subsidiary thoughts to be expressed. In this way, then, the truth or falsity of the main clause is dependent on the adverbial clause. Additionally, however, we should note that the truth of the whole statement of (3)a (as opposed to that of just its main clause, expressed in (3)h) is dependent on the truth of the when-clause.



A when-clause can be negated, however. But there is something odd about this negation. Note that it might be possible for (3)i to occur:

(3)i A: jeb ram ne sīta ka khilona toṛa teb voh rone legī

'When Ram broke Sita's toy, she started to cry.'

B: yeh sec nehī ki jeb ram ne sīta ka khilona toṛa teb voh rone legī--esēl mē, ram ne uska khilona nehī toṛa

'It's not true that when Ram broke her toy Sita began to cry.  
In fact, Ram didn't break her toy.'

But there is something peculiar about this. Note that we can also say:

(1)e It's not true that the present king of France is bald--in fact, there is no present king of France.

(2)e yoh sec nehī ki jis larkī ke sath mē rehtī hū voh rāsayanvigyan pēṛhtī hē--esēl mē, mē kisī larkī ke sath nehī rehtī

'It's not true that the girl who I live with studies chemistry--  
in fact, I don't live with any girl.'

But if statements such as (1), (2)a, and (3)a were to arise in conversation, and the contents of the definite noun phrase, the relative clause, and the adverbial clause were false, it would be much more common to deny them with but-statements, as in (1)f, (2)f, and (3)j than as in the above: (to be spoken with a puzzled expression on the face and with protesting intonation):

(1)f But France doesn't have a king.

(2)f lekin ap kisī larkī ke sath nehī rehtī

'But you (feminine) don't live with any girl.'

(3)j lekin ram ne sīta ka khilona nehī toṛa

'But Ram didn't break Sita's toy.'

Presuppositions depend not only on the knowledge of the speaker, but also on that knowledge of real world conditions which he imputes to his audience. If the speaker makes a mistake and includes in his presupposition material of which the hearer is actually ignorant, then the hearer can either accept the material as being unquestionably true or (as is probably more frequently the case, unless the hearer for some reason does not want to reveal that he has not known the information) he can make it clear that the information is new to him. Thus, if some speaker were to say (3)a to someone who hadn't heard about Ram's breaking Sita's toy, the



hearer would probably be confused by it and might very well say something like (3)k or l:

(3)k *ere-kya ram ne sīta ka khilōna tor̥ diya?*

'Oh--did Ram break Sita's toy?'

l *ere--mujhe malūm nahī tha ki ram ne sīta ka khilōna tor̥ diya*

'Oh--I didn't know that Ram broke Sita's toy.'

Either of these is more likely to occur than the denial shown in (3)i.

As we have inferred in the preceding paragraph, in a conversation each partner must make certain presumptions about the knowledge on the part of the other speaker and must phrase his own utterances in ways that take these presumptions into account. Paul Grice, in observing the kinds of rules people follow when participating in a conversation, has called attention to the fact that both participants must cooperate with each other. As a part of what Grice calls the 'Cooperative Principle', each participant tells the truth and assumes the other does the same. Additionally, both partners will follow the double-edged maxim of quantity: (1) Make your contribution as informative as is required. (2) Do not make your contribution more informative than is required. (Grice 1968) The maxim regarding truth can explain why we regard the contents of a *ḡeb*-clause to be true.<sup>6</sup> The maxims of quantity can give us a clue as to why a *ḡeb*-clause is used at all. As we have seen, it is necessary to anchor assertions to a definite time. Therefore, in order to provide as much information as is required, at some point in the discourse it will be necessary to state the time at which some event took place. But if the events establishing the time at which the main clause took place are already known to both speaker and hearer, then there is no need to state them in a separate assertion. Thus, if his hearer already knows that Ram broke Sita's toy at some time *t*, there is no need for the speaker to state this in a separate assertion, as in (3)m:

(3)m *ram ne sīta ka khilōna tor̥a. us samēy veh rone lagī*

'Ram broke Sita's toy. At that time she began to cry.'

In fact, by the second maxim of quantity this separate assertion is prevented from occurring. Thus, some sort of adverbial formation is the only option the speaker has.





If the material in a presupposition is later shown to be false, we experience the feeling that the Cooperative Principle has not been followed, that we have been cheated or duped in some way; that the other speaker isn't playing fair. Avrum Stroll writes on this topic:

... the oddity we feel upon hearing such sentences ['All my children are in college, but I don't have any children'; 'Smith has just gone out, but I don't believe he has'] stems from a disparity between the conditions we assume will have been satisfied whenever someone is trying to communicate with another and the utterances we expect will be employed in those circumstances. In effect, this is to say that certain assumptions, or presuppositions, that communicating human beings make in the everyday give-and-take of verbal intercourse, fail to hold or are violated in such circumstances. (Stroll 1967:447)

If we accept the contents of past-tense jəb-clauses as being presupposed, then the confusion we feel if we later learn the occurrences stated in the clauses as occurring did not really take place can be explained as being on the same level as is our confusion when we are told that other information we had presupposed to be true is actually false.

Past-tense jəb-clauses and the other types of presuppositions we've been examining are similar in another way, too--that being that they all have a unique reference. Thus, the present king of France, jis lərkī ke sath mē rəhtī hū, and jəb ram ne sīta ka khilona tora all have a single entity as their reference. The jəb-clause is slightly different in that the entity to which it refers is not concrete, but is, rather, a particular time; nonetheless, the fact that each of these specifies a particular referent indicates that they are functioning in a similar fashion. Frege goes so far as to say, in fact, that such adverbial expressions should be considered proper names:

Places, instants, stretches of time, are, logically considered, objects; hence the linguistic designation of a definite place, a definite instant, or a stretch of time is to be regarded as a proper name. Now adverbial clauses of place and time can be used for the construction of such a proper name in a manner similar to that which we have seen in the case of noun and adjective clauses. (Frege 1960:71)

Whether or not this is legitimate, it is obvious that adverbial clauses, as well as definite descriptions and restrictive relative clauses, are used to make unambiguous references.



The reader may have noticed that throughout this paper I have specified that it is past-tense jəb-clauses which are used to state presuppositions. This care has been taken because it is not at all clear that the same thing can be said of jəb-clauses whose verbs are of non-past form, that is, which refer to a habitually-occurring event or which refer to the future. If we apply the negation test to a habitual, it seems as though the contents of the jəb-clause are presupposed. For instance, in (4)b it is the main clause which is negated (as in (4)c) and never the adverbial (as in (4)d). Moreover, (4)e, while it can be said, is peculiar in the same way that (1)e, (2)e, and (3)iB have been seen to be peculiar.

(4)a jəb (bhī) həm cīriyaghər jate hē təb həm turənt bhaluō ko dekhne jate hē

'When(ever) we go to the zoo, we immediately go to see the bears.'

b yəh bat nəhī ki jəb həm cīriyaghər jate hē təb həm turənt bhaluō ko dekhne jate hē

'It's not the case that when we go to the zoo we immediately go to see the bears.'

c jəb həm cīriyaghər jate hē təb həm turənt bhaluō ko dekhne nəhī jate

'When we go to the zoo, we don't immediately go to see the bears.'

d həm cīriyaghər nəhī jate

'We don't go to the zoo.'

e yəh bat nəhī ki jəb həm cīriyaghər jate hē təb həm turənt bhaluō ko dekhne jate hē--əsal mē, həm cīriyaghər nəhī jate

'It's not the case that when we go to the zoo we go immediately to see the bears--in fact, we don't go to the zoo.'

It is assumed that when the speaker says (4)a his family (or whoever the reference of həm 'we' might be) goes to the zoo fairly regularly. Yet we feel uncomfortable calling this a 'presupposition'--partly, I suspect, because a habitual jəb-clause does not refer uniquely. Yet obviously, if the family never goes to the zoo, the main clause can be neither true nor false, thus fulfilling the conditions for a presupposition.

The problem is compounded with sentences referring to the future, however. Consider:





(5)a jəb həm šikago jaēge təb həm pikaso ka but dekhēge

'When we go to Chicago, we will see Picasso's statue.'

b yəb bat nəhĩ ki jəb həm šikago jaēge təb həm pikaso ka but dekhēge

'It's not the case that when we go to Chicago we will see Picasso's statue.'

c jəb həm šikago jaēge təb həm pikaso ka but nəhĩ dekhēge

'When we go to Chicago, we won't see Picasso's statue.'

d həm šikago nəhĩ jaēge

'We aren't going to Chicago.'

e yəb bat nəhĩ ki jəb həm šikago jaēge təb həm pikaso ka but dekhēge--əsəl mē, həm šikago nəhĩ jaēge

'It's not the case that when we go to Chicago we'll see Picasso's statue--actually, we aren't going to go to Chicago.'

As in the other cases we've observed, the effect of negating the whole sentence is to negate the main clause and leave the jəb-clause untouched. However, the possibility that the jəb-clause may not come to pass is much more evident than its possible non-occurrence in the other tenses. (5)e is just as peculiar as the corresponding sentences have been in the other tenses, indicating that there is a strong presumption that the contents of the jəb-clause will occur. Nonetheless, it seems much too strong to say that it is presupposed that the events of the jəb-clause will actually happen. One cannot have presuppositions about the future because truth values cannot be assigned to sentences having future reference. Leaving jəb-clauses for the moment, let us consider simple sentences referring to the future. Suppose that some person x says,

(6)a kəl mē šikago ja rəha hũ

'I'm going to Chicago tomorrow.'

No truth value can be assigned to his statement, even though it appears in the form of an assertion. That is, if we were to approach some other person with (6)b,

(6)b 'kəl x šikago ja rəha hē-- səc ya jhũt?

'x is going to Chicago tomorrow"--true or false?'

he wouldn't be able to answer either way. However, if we were to rephrase our question so that x's words appear under a present or a past tense verb, as in (6)c, the question can easily be answered.



(6)c 'x {  $\begin{matrix} \text{ne kəha} \\ \text{kəhta hɛ} \end{matrix}$  } ki kəl mē šikago ja rəha hū--səc ya jhūt?

'x {  $\begin{matrix} \text{said} \\ \text{says} \end{matrix}$  } that he is going to Chicago tomorrow"--true or false?'

However, only God could answer a question of the form (6)b.

Evidence that even jəb-clauses with future reference have something like presuppositional status comes from the observation that these sentences can frequently function as speech acts of promising. This is the case, for example, with (5)a, which can be either a declaration of intention (with the main clause acting as an assertion), or a promise, with the higher verb of promising deleted. Since in order to make a promise, it is understood that the speaker is sincere,<sup>7</sup> we assume that he would not word the sentence in this way unless he were fairly sure that the group was, indeed, going to go to Chicago.

A final piece of evidence for the presupposition-like nature of future tense jəb-clauses can be found in contrasting them with conditional sentences, which they often closely resemble. Thus, there seems to be little difference between (7)a and (7)b:

(7)a jəb ap šikago {  $\begin{matrix} \text{jaẽ} \\ \text{jaẽge} \end{matrix}$  } təb ap pikaso ka but dekhẽ  
dekhẽge  
'When you go to Chicago, you will see Picasso's statue.'

(7)b əgər ap šikago {  $\begin{matrix} \text{jaẽ} \\ \text{jaẽge} \end{matrix}$  } to ap pikaso ka but dekhẽ  
dekhẽge  
'If you go to Chicago, you will see Picasso's statue.'

although (7)a would probably be said when there is greater likelihood that the person addressed will indeed go to Chicago. However, syntactic evidence of their difference also exists. The native speakers I consulted said that they felt that with jəb, the use of the optative jaẽ may be for politeness, whereas with əgər the optative verb had conditional force. Testing this intuition by substituting another subject for ad, we find this to be the case: a jəb-clause does not normally take an optative verb:

(8)a jəb mɛ bharat {  $\begin{matrix} *jaũ \\ jaũga \end{matrix}$  } təb mɛ ap se zərur milũga  
'When I go to India, I will definitely see you.'



When we compare (8)a, the when-clause sentence, and (8)b, the if-clause one, we find that the if-clause tolerates optative:

(8)b eger mē bharat  $\left\{ \begin{array}{l} \text{jāũ} \\ \text{jāũga} \end{array} \right\}$  to mē ap se zərur milũga

'If I go to India, then I will definitely see you.'

In addition to the future tense verb (jāũga), it is also correct to use the past tense form with an if-clause, followed by a future-tense verb in the then-clause. Even though the if-clause of (8)c contains the past tense verb form gaya, then, its meaning is still approximately the same as that of (8)b.

(8)c eger mē bharat gaya to mē ap se zərur milũga

'If I go to India, then I will definitely see you.'

But if we attempt this same substitution in a when-clause sentence, replacing the ungrammatical optative with a past-tense verb, the result is pure garbage. (8)d not only does not have the same meaning as (8)a (as we would predict, were the future and the conditional identical), (8)d fails to have any meaning at all, as we cannot link the when-clause of the past and the then-clause with future reference to achieve a sense-bearing statement.

(8)d \*jeb mē bharat gaya teb mē zərūr ap se milũga

\*'When I went to India, then I will definitely see you.'

The past-tense form of the verb, then, has simply been substituted for the future in eger-clauses and has the same force as future in them (Y. Kachru, private communication). Thus, we see that jeb- and eger-clauses differ syntactically as well as in that vague area known as 'meaning'.

Although it is obviously false to claim that in all cases a jeb-clause states a presupposition, I hope to have shown that in at least some instances this is the case and that to give false information in a jeb-clause is to fail to follow the Cooperative Principle. A useful direction for research at this point, then, might be to investigate the other relative-like adverbials to see if the same relationship holds.





## NOTES

- <sup>1</sup>I owe immense gratitude to Zarina Manawwar Hock for her intuitions as a native speaker and for her seemingly tireless patience in listening to sentences.
- <sup>2</sup>For examples of these in full sentences and remarks on their usage, see McGregor 1972:82-7.
- <sup>3</sup>For a brief summary of Russell's position, see Linsky 1967.
- <sup>4</sup>For similar statements of the same notion, see Stalnaker 1970: 279 and Stroll 1967:447.
- <sup>5</sup>It should perhaps be noted that Baker 1956:373-4 rejects the notion that such clauses can never assert material.
- <sup>6</sup>Of course, by this, we also expect the assertion to be true; yet as we have seen, the main clause can easily be negated. We might note that it is only the skillful liar who will incorporate false material in relative and adverbial clauses. And in this situation, even if his hearers are suspicious of his honesty, they will tend to accept the material presented in these constructions. Strawson points to the use of such sentences as the present king of France is bald to get the hearer to believe a falsehood when he writes:  
It is, if you like, a spurious use of the sentence, and a spurious use of the expression; though we may (or may not) mistakenly think it a genuine use. (Strawson 1950:331)
- <sup>7</sup>See Austin 1962 for details.

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# IS THERE AN a-EPENTHESIS IN SANSKRIT?<sup>1</sup>

Hans Henrich Hock

0: In two recent papers (1972 and Forthcoming), Kiparsky has postulated a process of a-Epenthesis for Sanskrit. The purpose of this paper is to examine whether the evidence of Sanskrit does indeed support the postulated process, and in so doing to come to some (admittedly somewhat tentative conclusions about the general conditions under which epenthesis can be justifiably postulated as a process in a given language.

1: In the mentioned papers, Kiparsky postulated the following relevant rules.<sup>2</sup>

(a) A process of Ø-Grade Formation which, in Kiparsky's formulation, deletes unaccented underlying short /a/ before nonobstruents followed by zero or more consonants plus a morpheme boundary (p.38):

(i)  $[- \overset{a}{\text{acct.}}] \rightarrow \emptyset / \_\_ [- \text{obstr.}] C_0 +$

(b) A process of Vocalization, by which sonorant consonants are specified as syllabic after consonant plus nonsyllabic sonorant and before vowel (42):

(ii)

$[+ \text{son.}] \rightarrow [+ \text{syll.}] / C [+ \text{son.}] \_\_ V$   
 $[+ \text{cons.}]$

(c) A process of Accent Retraction which in effect accents a nonlow vocalic segment in a syllable preceding an accented noun ending (but not before a verb ending) (39):



(iii)

$$[+ \text{syll.}]_{\text{low}} \rightarrow [+ \text{acct.}] / \text{--- } C_0 + \left[ C_0 [+ \text{acct.}]^V \right]_{\text{CASE}}$$

(d) A process which in the following I will refer to as a-Epenthesis and which inserts an a before a short nonlow syllabic segment followed by morpheme boundary and a nonconsonantal segment (42):

$$(iv) \emptyset \rightarrow a / \text{--- } \begin{matrix} + \text{syll.} \\ [- \text{low}] + [- \text{cons.}] \\ - \text{long} \end{matrix}$$

(e) A process of resyllabification which, according to Kiparsky (fn. 8, 11), takes place anywhere in the derivation where it is needed (1972:2):

$$(v) [+ \text{son.}] \rightarrow [- \text{syll.}] / [+ \text{syll.}] \text{---}$$

(f) In addition, for some derivations Kiparsky has to invoke Sievers's Law, a set of rules specifying the syllabicity or nonsyllabicity (mainly) of high sonorants; cf. the following relevant subrules (adapted from 1972:2):

$$(vi) \begin{matrix} + \text{son.} \\ + \text{high} \end{matrix} \rightarrow [+ \text{syll.}] / \left\{ \begin{matrix} C \\ V \end{matrix} \right\} C \text{---}$$

$$\begin{matrix} + \text{son.} \\ + \text{high} \end{matrix} \rightarrow [- \text{syll.}] \text{ ("elsewhere")}$$

As for the function of these rules, Kiparsky states that Vocalization and a-Epenthesis are the primary mechanism to eliminate CRRV-clusters when they arise through ablaut, i.e. through  $\emptyset$ -Grade Formation. (40-2.)

Finally, Kiparsky postulates another branch of Vocalization (triggering off a-Epenthesis) in certain initial CRV-clusters, such as #tnV-. (42c-3.)

2: Kiparsky's evidence for these rules, especially for (Vocalization and) a-Epenthesis, the subject of this paper, can be seen from the following derivations.<sup>3</sup>



(a) Instrumental singular of n-stems (and similar forms in the n-stem paradigm):<sup>4</sup>

	/mūrdh-an-ā/	/āt-man-ā/
(i)	mūrdh-n-ā	āt-mṇ-ā
(ii)	-----	āt-mṇ-ā
(iii)	-----	āt-mṇ-ā
(iv)	-----	āt-maṇ-ā
(v)	-----	āt-mān-ā
Surface:	mūrdhnā	ātmanā
(other rules)		

(b) Passive sg. 3 pres.:<sup>5</sup>

	/mar-yā-tai/	/smar-yā-tai/
(i)	mr-yā-tai	smr-yā-tai
(ii)	-----	smr-yā-tai
(iii)	( Not applicable in verbs )	
(iv)	-----	smar-yā-tai
(v)	-----	smar-yā-tai
Surface:	mriyāte	smariyāte

(c) Instrumental singular of root noun tan-:

	/tan-ā/
(i)	tṇ-ā
(ii)	tṇ-ā
(iii)	tṇ-ā
(iv)	tāṇ-ā
(v)	tān-ā
Surface:	tānā

(d) Dative singular (and other forms) of the i- (and u-)stems:

	/agn-i-é/	/ar-i-é/
(vi)	agn-i-é	ar-y-é
(iii)	agn-ī-é	-----
(iv)	agn-ai-é	-----
(v)	agn-āy-é	-----
Surface:	agnāye	aryé





3: Though the above derivations "work", in that they correctly produce the correct (or desired) outputs, there are a number of problems with them.

3.1: One of these was pointed out by Kiparsky himself:

The derivations of section 2 (d) make the claim that endings like that of the dative singular agnáye occur only after heavy syllable, where Sievers's Law specifies the /i/ of the underlying suffix as [+voc.]. After light syllables, however, where Sievers's Law specifies the underlying /i/ as [-voc.], we should get only endings as that found in aryé. In fact, however, we find the ending -aye even after light syllables; cf. forms like sg. D áhaye of áhi-. Kiparsky therefore correctly concluded that the difference between the ending types -aye and -ye cannot be synchronically predicted by his rules. (42c.)

As a matter of fact, there are at least two forms in the i- (and u-)stem paradigms, namely the vocative and the (original) locative singular, which could never in the history or prehistory of Sanskrit have been derived by Kiparsky's rules, since in both cases the environment for a-Epenthesis was never met, the suffixal /i/ being followed by word boundary, rather than by morpheme boundary plus nonconsonantal segment. Compare sg. V agn-e and sg. L \*agn-āi,<sup>6</sup> both from /agn-i/ if Kiparsky's analysis is accepted; and contrast these with sg. N/A n. vār-i, underlying /vār-i/, and similar forms which unambiguously show that it would be impossible to reformulate a-Epenthesis such that it would apply also before word boundary. These forms can be related to the i and ay of other surface i-stem forms only by means of ablaut, such that i is the Ø-grade, ay ~ e the full-grade, and \*āi the extended-grade form.



Considering that these surface forms and alternations, as well as of course the principle of ablaut itself, go back to Proto-Indo-European, the i- (and u-)stem forms in question can under no circumstances be considered evidence for a synchronic rule of a-Epenthesis, even in earlier, prehistoric stages of Sanskrit.

3.2: A further objection which must be raised against Kiparsky's analysis is that the two crucial rules, Vocalization and a-Epenthesis, are quite unnatural as formulated:

(a) The Vocalization rule syllabifies a sonorant before vowel, creating a sequence CRPV which is not permitted on the surface and which is in conflict with the general trend of Sanskrit rules, as well as with the universal trend, to eliminate, rather than introduce, clusters of syllabic segments; cf. Hock 1973:82-5 for the (post-Rig-Vedic) Sanskrit situation.

(b) The environment for a-Epenthesis, namely before syllabic segments, frequently even before two (!) syllabic segments (cf. derivations (a), (c), and (d) in section 2 above), is similarly in conflict with the general Sanskrit (and universal) trend away from syllabic clusters. Additionally, epenthetic vowels are a priori rather unnatural before other syllabic segments. A much more natural environment for vowel epenthesis would be between nonsyllabic segments.

These difficulties with Kiparsky's analysis, however, can be easily taken care of by eliminating the rule of Vocalization altogether, by reformulating a-Epenthesis as indicated in (iv') below, and by reordering (a slightly revised) Accent Retraction (rule (iii)) after the revised a-Epenthesis rule; cf. the derivation below.





- (iv')  $\emptyset \rightarrow a / CR \_ R + [-cons.]$   
           /at-man-ā/
- (i)           at-mn-ā
- (iv')          at-man-ā
- (iii)         at-mán-ā
- Surface:     ātmānā

3.3: A more important objection to Kiparsky's analysis, however, is the fact that, with the i- (and u-) stems eliminated as plausible synchronic evidence for a-Epenthesis (even in its revised form), it turns out that all alleged instances of epenthetic a are phonetically identical with, and occur in the same environment as, an underlying /a/ which is said to have been dropped by application of  $\emptyset$ -Grade Formation. This can be easily verified by checking derivations (a)-(c) in section 2 above. Note that there are no instances elsewhere in the language where a is inserted into sequences of the type CRRV which are either already present as such in the underlying structure, or which contained a different, (derivationally) lost underlying vowel, or which, though containing an underlying /a/, offered that /a/ in a position different from that of the surface a.<sup>6a</sup>

Kiparsky's analysis provides no explanation for this remarkable coincidence of underlying and surface a. On the contrary, it would at least implicitly be claiming that this coincidence is entirely accidental (since a priori, any short vowel, not just a, but also i or u, could have been inserted by epenthesis).

4: Given this situation, it would seem quite preferable to adopt an alternative analysis which postulates a derivational constraint against the application of the  $\emptyset$ -Grade Formation rule if this would lead to CRRV-clus-



ters (or to certain nonpermissible initial CRV-clusters).

Under this analysis, the remarkable coincidence of surface and underlying a would, of course, not be accidental. It would rather be the result of the fact that blocking the application of Ø-Grade Formation preserved the underlying /a/ in its original position. Compare the following derivations.

	/mārdh-an-ā/	/āt-man-ā
(i)	mārdh-n-ā	BLOCKED
(iii)	-----	āt-mān-ā
Surface:	mārdhnā	ātmānā

5: Though this alternative analysis, which in contrast to Kiparsky's "epenthesis" analysis I will from now on refer to as the "constraint" analysis, thus is clearly preferable and more explanatory than the "epenthesis" analysis, it may be good to look at further evidence, in order to show that it is not only preferable, but indeed the only possible analysis.

6.1: As it turns out, Kiparsky's Ø-Grade Formation needs to be reformulated as indicated under (i') below, to account for the fact that unaccented underlying /a/ is zeroed out not only before nonobstruents followed by zero or more consonants plus morpheme boundary, but also directly before obstruents plus morpheme boundary; cf. the data below.

(i') [<sub>-</sub> <sup>a</sup>acct.] --> Ø / \_\_\_\_ ([- obstr.] C<sub>0</sub> +

Compare ās-mi 'I am' : s-mās 'we are'; RV (pa-pāt-a 'I flew' :) pa-pti-mā 'we flew'.

6.2: As in the case of Ø-Grade Formation before non-obstruents (etc.), so also directly before obstruents, there is evidence for restrictions on what kind of con-



sonant clusters are permissible as the result of Ø-Grade Formation; cf. the following evidence.

	Underlying form	Surface form
ppl.	/bhar-tá-/	bhr-tá-
	vs. /bhag-tá-/	bhak-tá-
	/sad-ná-/	san-ná-
pl. 2	/as-thá/	s-thá
	vs. /ad-thá/	at-thá
sg. I	/pad-á/	pad-á
	vs. noun stem	
	/upa-pad-á-/	upa-bd-á-

In addition, there is evidence that at least some of these restrictions are in the process of being generalized, such that even where Ø-Grade Formation would produce perfectly acceptable surface forms, we usually find surface forms with, rather than without, surface a.<sup>7</sup> Thus, while the verb root as- 'be' usually shows a-less Ø-grade forms on the surface, such as s-más, s-thá, s-ánti, (-)s-tí- 'being' (but also -as-tí- 'being'), all other roots with initial underlying /a/ and root-final obstruent have surface a, even where a-less forms would be acceptable. Compare not only at-thá 'you eat' (where t-thá\* would not be permissible), but also ad-más (not d-más\*, although dhmā- 'blow' shows that initial dental stop plus m plus vowel configurations are acceptable), ad-ánti (vs. dant- 'tooth', historically containing the regular prevocalic Ø-grade of the root ad- 'eat', but synchronically apparently no longer related to ad-).

6.3: It is unnecessary for the purposes of this paper to go into a detailed discussion of what kinds of clusters are permitted, and in what environment, and what are the criteria for the generalizations of these restrictions. As will be seen, it is sufficient to state that





there are such restrictions and that, if the "epenthesis" analysis were to be maintained, the rule of a-Epenthesis would have to be adjusted in an appropriate manner to account for the presence or absence of surface a.

6.4: What is important, however, is that, as shown by the evidence below, it would be impossible to reformulate the a-Epenthesis rule such that it would correctly predict the environment in which the a is inserted.

Underlying forms	Post-Ø-Grade forms	Surface forms
/-akʂ-nau-ti/	/-kʂ-nau-ti/ <sup>8</sup>	-akʂ-no-ti
/-akʂ-tá-/	/-kʂ-tá-/	-aʂ-tá- <sup>8a</sup>
} #__CC+C		
/kas-tá-/	/ks-tá-/	kas-tá-
/śas-ta-/	/śs-ta-/	śas-ta-
/has-ta-/	/hs-ta-/	has-i-ta- <sup>9</sup>
} #C__C+C		

As can be seen from these data, if Kiparsky's "epenthesis" analysis and its sequence of rules (Ø-Grade Formation : a-Epenthesis) is accepted, it must be assumed that in one set of forms the allegedly epenthetic a is inserted before, in the other, after the initial consonant of the consonant cluster arising from the application of the (revised) Ø-Grade Formation rule.

6.5: This is very unlikely to be attributable to the difference in the kinds of consonants which form a non-permissible cluster as the result of Ø-Grade Formation. For there is a general, independently motivated rule, given below, which would automatically convert the post-Ø-Grade clusters ks, śs, and hs of the last three forms in 6.4 above into kʂ, that is, into a cluster which is identical with that found in the first two forms in section 6.4.



$$\left\{ \begin{array}{c} ks \\ \acute{s}s \\ hs \\ (...) \end{array} \right\} \longrightarrow k\acute{s}$$

Compare /sak-sya-ti/ --> sak-sya-ti; /dais-sya-ti/ --> dek-sya-ti; /já-has-ant-/ (pple. of the reduplicated form of has- above) --> já-ks-at.

6.6: The now even more remarkable fact that also in these forms the surface positions of the allegedly epenthetic a are completely identical to its underlying positions, but (in addition) not predictable in terms of the phonetic environment resulting from Ø-Grade Formation, would, under the "epenthesis" analysis, still be accidental (in addition to being inexplicable).

7.1: In addition, as the evidence below shows, in the environment between obstruents, the allegedly epenthetic a occurs only in those positions where an underlying /a/ has been eliminated by Ø-Grade Formation. Elsewhere, i.e. where there is no corresponding underlying /a/, the epenthetic vowel (if any) is i, never a.

Underlying forms	Post-Ø-Grade forms	Surface forms
/-ak <u>s</u> -nau-ti/	/-k <u>s</u> -nau-ti/	-ak <u>s</u> - <u>no</u> -ti
/-ak <u>s</u> -tá-	/-k <u>s</u> -tá-/	-a <u>s</u> -tá-
/tak <u>s</u> -tá-/	/tk <u>s</u> -tá-/	ta <u>s</u> -tá-
/bhag-tá-/	/bhg-tá-/	bhak-tá-
etc.		
/ubj-tá-/		ubj-i-tá-
/ik <u>s</u> -tá-/		ík <u>s</u> -i-tá-
etc.		

7.2: That this cannot be due to the fact that the consonant clusters interrupted by i are preceded by differ-





ent vowels (namely high vowels) is indicated by the following evidence.

Underlying forms	Surface forms
/has-ta-/	has-i-ta-
/rakṣ-tā-/	rakṣ-i-tā-

As this evidence shows, i-Epenthesis is independent of the kind of vowel which precedes the cluster into which the i is inserted. The only relevant environment for i-Epenthesis is that indicated below.<sup>10</sup>

Ø --> i / V(C)C \_\_\_\_ + C

7.3: Again, the "epenthesis" analysis would have to consider it completely accidental and inexplicable that the allegedly epenthetic a is restricted to those positions where an underlying /a/ has been eliminated by Ø-Grade Formation, and that elsewhere only i, never a, serves to break up consonant clusters.<sup>11</sup>

8: The "epenthesis" analysis thus fails to satisfactorily account for the additional evidence examined in sections 6 and 7 above in at least two ways:

In some cases, it fails to correctly predict the surface position of the allegedly epenthetic a.

In other cases, it fails to explain the regular difference between the alleged a-Epenthesis and i-Epenthesis, namely that the former applies only in those positions where an underlying /a/ has been lost through Ø-Grade Formation, while the latter applies elsewhere.

9: However, no such difficulties will be encountered if the "constraint" analysis is adopted (with appropriate changes).

In that case, all of these occurrences of surface a in only those positions where a corresponding under-



lying /a/ occurs find their natural explanation as simple instances of the underlying /a/ remaining on the surface due to the derivational constraint (sometimes generalized) against the application of Ø-Grade Formation in certain environments.

On the other hand, the surface i which serves to break up consonant clusters (and which never corresponds to vowels present in the underlying representation) clearly is the result of a true epenthetic process. (Note that capturing this significant difference between the origin of surface a and that of surface i is another important asset of the "constraint" analysis.)

10: Thus, considering that only the "constraint" analysis provides a natural explanation of the new evidence examined in sections 6 and 7, while the "epenthesis" analysis does not, it is clear that the "constraint" analysis not only is the preferable of the two, but that in fact it is the only possible one.

11: It must be admitted that there is one a priori conceivable way to salvage Kiparsky's "epenthesis" analysis, namely considering a-Epenthesis a global rule, inserting a only in those positions where it occurred underlyingly and where its loss (by Ø-Grade Formation) has led to non-permissible clusters. However, such a global "epenthesis" analysis seems to be merely begging the question.

12: In conclusion, it can be stated that the results of the preceding discussion of the Sanskrit evidence against Kiparsky's a-Epenthesis (and for the true epenthetic nature of i-Epenthesis) suggest the postulation of the following principle governing epenthetic processes in general. (Though the principle is admittedly still



somewhat tentative, in that it is based only on the evidence of a single language, I am confident that further research in other languages will confirm it.)

'Any analysis postulating epenthetic segments must be based on independent evidence, such that at least some of the surface occurrences of the epenthetic segment do not phonetically or positionally coincide with a (deleted) underlying segment.'

#### FOOTNOTES

1 An earlier version of this paper was read at the 1973 Annual Meeting of the Michigan Linguistic Society, October 5, 1973, at Kalamazoo, Michigan. -- Research on this paper was in part supported by a University of Illinois 1973 Summer Faculty Fellowship and by a joint travel grant from the University of Illinois Department of Linguistics, Office of International Programs and Studies, and Center for International Comparative Studies.

2 Unless indicated otherwise, references are to Kiparsky Forthcoming.

3 The (lower-case) Roman numerals refer to the rules in section 1 above.

4 In Fn. 12, Kiparsky states the following. 'The Rígvédic meter sometimes requires syllabic -an in other stem types too, e.g. nām[alṇā "name", rāj[alṇā "king", and even after short syllables, e.g. sporadically vīṣ[alṇas "bull". It is possible that these forms are not exceptions, but morphophonemic scansions of the sort analyzed in Kiparsky 1972[b]. In some cases, the traditional text spells out the vowel, e.g. bhūmanas "world".' -- As I have shown elsewhere (Took Forthcoming), forms like pl. A vīṣ[alṇas (but always sg. G/Abl. vīṣṇas, never vīṣ[alṇas\*, except in one very late, dubious attestation) have to be considered in a different context from that here under discussion, since they are (at least historically) not Ø-grade formations, but full-grade (guṇa) formations of a set of stems which also in other paradigmatic forms exhibit synchronically





aberrant behavior. As for forms like nām[al]nā, rāj[al]nā, bhūmanas, the following comments seem to be in order.

(a) In the Rig-Vedic man-stems, the  $\emptyset$ -grade forms with (metrically required) surface a outnumber those without a by a ratio of 38 : 11 (or 12). Even after short vowel, surface forms with a, such as mahimānas (2x), can be found. Cf. Hock Forthcoming:2.10.2, fn. 16. (b) In the simple n-stems, however, only two alleged Rig-Vedic  $\emptyset$ -grade forms with surface a are found, namely mah[al]nā (2x) and rāj[al]nā (RV 10:97:22b). As I have shown in Hock Forthcoming:2.10.2, the former of these two forms might well be emended to mah[i]nā (dissimilated from /mahi-mn-ā/, instrumental singular of near-synonymous mahi-man-). For the latter, I would now accept Lanman's (1880:525) interpretation that emendation to rāj[al]nā is not necessary, since unemended rājñā would fit perfectly into the cadence of a catelectic verse. There would be ample precedent for such an interpretation, for, as Arnold (1905:323) showed, there are three other catelectic verses in this hymn (14c, 15c, 19c), in addition to two further instances of (less typical) heptasyllabic verses (13a, 20a). -- That is,  $\emptyset$ -grade forms with surface a are limited to man-stems (and apparently also van-stems, which I have not looked into), while simple n-stems never have such forms. This makes Kiparsky's suggestion very unlikely, namely that scansions which require such surface a-forms are instances of metrical scansion in reference to underlying or intermediate, rather than surface structures. For if Kiparsky were right, we would expect such forms not to be limited to only some (sub-)categories (of the n-stems); we would expect to find them also in simple n̄-stem forms. It seems therefore more likely that the constraint against CRRV-clusters was, in the Rig-Vedic man-stems; in the process of being generalized to all man-stems, even those in -V-m(a)n-V. (That the later language shows no such generalization is not necessarily evidence in favor of Kiparsky's analysis, and against mine. Rather, it may simply be the result of the well-known fact that the dialect of Rig-Veda was not only chronologically, but also geographically different from that of the later, post-Rig-Vedic stage(s) of the language. For one such dialect difference, compare the fact that while in the Rig-Vedic future, i-Epenthesis (for which cf. section 7.2 below) seems to be regular after all roots in r, but optional after other resonants; cf. O'Bryan 1973:20. In the even further Eastern, Middle Indic dialect of Pāli, i-Epenthesis seems to have been optional even after r; cf. kāsatī ~ kassatī from /kār-ssa-ti/ < \*kār-ṣya-ti; for these forms cf. O'Bryan 1973:153.)



5 This derivation is not formalized in Kiparsky Forthcoming; but cf. Kiparsky 1972a:1.

6 This was later replaced by the \*-au of the u-stem locative singular; hence the historically attested agnā(u).

6a It is true, Kiparsky (42) cites one form where an epenthetic u is said to correspond to an underlying a, namely dvaimātura- 'having two mothers' from an underlying stem /-mātar-/. However, in aniṭ-formations, this late (apparently only Classical) form is quite anomalous. Forms of this sort, with -ur-, are otherwise at home only in the set-roots, where they are of no relevance to the processes here under discussion. One suspects that dvaimātura- shows a late, and evidently sporadic, generalization from the set-formations to aniṭ-formations. It thus can hardly qualify as evidence for a general u-epenthesis rule, affecting aniṭ-formations and coexisting with the a-Epenthesis under discussion.

7 Cf. also fn. 4 above for a similar generalization in the Rig-Vedic inflection of the man-stems.

8 No accented forms of this (Rig-Vedic) present happen to be attested. That the root should, nevertheless, undergo Ø-Grade Formation is seen from parallel forms like i-no-ti (from /ai-nau-ti/). Note also that although, as indicated by the preposed hyphens, the forms of the root akṣ- occur only in compounds with a preverb, this is of no significance for the subsequent discussion, since also (some of) the other roots examined can occur with preverbs.

8a Note that clusters of stop plus sibilant plus stop cannot remain on the surface. They are eliminated in three different fashions: (a) Loss of the first stop, as in /takṣ-ta-/ --> taṣ-ṭa- (limited to velars); (b) loss of the sibilant, as in /a-bhaḡ-s-ta-/ --> a-bhak-ta-; (c) i-Epenthesis (cf. section 7.2), as in /raḡṣ-tā-/ --> raḡṣ-i-tā-.

9 For the -i-, cf. section 7.2 below.

10 Note that, like the alleged a-Epenthesis, also i-Epenthesis is in the process of being generalized even into permissible clusters; cf. for instance has-i-ta-.





11 It is, of course, true that the environments for i-Epenthesis and for Kiparsky's a-Epenthesis differ: The former has V(C)C \_\_\_ +C, the latter, if formalizable, has something like (C) \_\_\_ C+C. Still, there is nothing in this environmental difference which would naturally determine the different choice of epenthetic vowels.

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\* This paper has now appeared (*Language* 49:794-849 (1973)); however, too late for making appropriate reference changes in the present paper.



GENERAL LINGUISTIC STUDIES IN HINDI:  
A REVIEW OF RESOURCES

Braj B. Kachru

0. INTRODUCTION<sup>1</sup>: In discussing the resources of a language in a specific field of study one has to be cautious about the possible reactions to one's review. A desirable reaction might initiate a thoughtful reevaluation of the literature of the field, and open a dialogue between scholars working in the field. The other possibility is that the reviewer, by attempting such a study, is arousing a hornet's nest which might awaken various language attitudes. Such a reaction, naturally, is counter productive, and the only thing it does is leave the unfortunate reviewer to nurse his stings.

I expect that this study will generate the former, constructive, reaction and will lead to a serious evaluation of the growing body of literature on linguistics in Hindi. It is with this hope that in this study I have set for myself the following goals. My primary aim is to present an over-view of those publications in Hindi which are classified as belonging to the areas of the linguistic sciences (bhāṣā-vijñān or bhāṣāsāstr). I shall mainly concentrate on the books published after 1930 and focus on their content in the areas of theoretical linguistics. I will also briefly discuss in what respects the linguists of the so-called Hindi area -- who write in Hindi -- have shown insights which could be of interest to non-Hindi knowing Indian or western linguists. I shall attempt to evaluate the content of these studies in terms of contemporary linguistic theories and controversies, though I am well aware that the meaning of the term contemporary in linguistics is very elusive. Finally, I shall revisit the hornet's nest to mildly touch upon two very controversial issues. First, given the nature and scope of current literature on general linguistics in Hindi, what, if any, are the limitations of a student who learns general linguistics through the Hindi medium. Secondly, I shall briefly discuss the pangs which the scholars in Hindi are experiencing in developing a



linguistic register.<sup>2</sup> This last aspect will be restricted to the question of linguistic terminology.

At the beginning it is appropriate to answer a possible question: Why have we chosen the Hindi language for this study? The primary reason is that in the area of linguistic studies Hindi has several points of strength. Let me mention those points here so that the overall picture of gloom which this study presents is slightly reduced. Among the Indian languages, Hindi is the only one in which a large number of studies on general linguistics has been published in the last two decades. This intense urge to publish perhaps shows that in Hindi there is a group of scholars actively involved in linguistic studies. Another encouraging sign is that several works on linguistics in Hindi have run into three, four, five or even seven editions. Thus, in terms of interest such studies have a potential reading public. It is also worth mentioning that out of the Indian languages, Hindi is one of the very few on which several linguistic studies have been made both in India and outside India, using various contemporary linguistic models (see Kachru, Yamuna 1968). Thus, one should be able to use the available linguistic research on Hindi for illustrating various theoretical concepts in a book on linguistics in this language. Another important consideration cannot be ignored. The achievements and failures of Hindi scholars in developing a body of linguistic writing might also help scholars in other Indian languages to give a direction to such studies in their respective languages.

Perhaps it will be useful, if at the outset, I briefly define what I mean by the areas of the linguistic sciences, and the sense in which I use the term. My use of the term is rather conservative for some of my North American colleagues. I shall include in it both general linguistics and general phonetics. I will, however, exclude works which are of some theoretical interest, but are mainly restricted to description of Hindi or its dialects, such as the following: Hardev Bahri, Hindi Semantics, (Allahabad, 1959), Ramsvarup Chaturvedi, Āgrā ṣile kī bōlī, (Allahabad, 1961)<sup>3</sup>; Chandrabhan Ravat, Mathurā ṣilē kī bōlī (Allahabad, 1967).





I am thus mainly concerned with such books which are expected to expose a student to general linguistics as an autonomous discipline, and which deal with the linguistic sciences per se, and not necessarily with the description of Hindi or its dialects.

1.0. THE TRADITION OF LINGUISTICS IN HINDI: The number of books in Hindi which deal with the linguistic sciences is rather small when compared with the major western languages. The main reason for this limited output is that in Hindi the tradition of general linguistic studies did not start as a distinct area of study and research. Whatever linguistic studies were initiated in the so-called Hindi areas were part of the literature curriculum of Hindi literature departments. The primary focus was philological and textual. This, of course, is not much different from how general linguistics started in Europe where it used to be part of the departments of Classics, and later of the departments of Modern European languages. In the case of Hindi, such an arrangement had both its advantages and disadvantages. Advantages in the sense that some basic language-oriented research on Hindi was accomplished. On the other hand, it had its disadvantages in the sense that Hindi linguistics did not develop a rigor and sophistication which, perhaps, it could develop in a theoretical framework that, ideally, a linguistics department could provide for it. In the departments of literature, this serious theoretical framework was either not cultivated since the focus was different, or a literature department did not provide the proper intellectual atmosphere for it. This again, is not true only of Hindi, but applies to most of the languages of the sub-continent, and is also true of the languages of Britain and other western countries.

The earlier work on general linguistics in Hindi was developed partly under two traditions. One of these may be termed the Taraporewala-Chatterji-Sen tradition.<sup>4</sup> This tradition was established at the University of Calcutta and came to its culmination during the period when Suniti Kumar Chatterji held the Chair of linguistics there. This owed its origin to the European philological tradition of the later nineteenth century. The second tradition -- though linked with the first



so far as the underlying theoretical concepts are concerned -- developed by direct contact of some Hindi scholars with British and French linguists. The results of such contacts are presented in Dharendra Varma's La Langue Braj (1933; reprinted in Hindi in 1954); and Baburam Saksena's Evolution of Awadhī (1938). An earlier publication Tulnātmak Bhāṣā-Sāstr athvā bhāṣāvijñān by Mangaldev Shastri (Allahabad, 1925) also shows this influence.

2.0. THE EARLIER INTRODUCTORY COURSES: It was what I have termed the Taraporewala-Chatterji-Sen tradition which initiated some linguistic research on Hindi, the model being Suniti Kumar Chatterji's The Origin and Development of the Bengali Language (1926). Following this model quite a few studies appeared (e.g. Udai Narain Tiwari, The Origin and Development of Bhojpuri (1960)).

It was again the need for introducing the language component in literature departments that started the independent work on linguistics in Hindi. One of the first books in Hindi with the title bhāṣāvijñān appeared in 1921. It was written by Shyamsundar Das with the help of Gopal Lal Khanna and published by the Indian Press Ltd., Allahabad. It was received well and by 1950, it had already run into six editions. The history of this book is rather interesting. A book on bhāṣāvijñān was to be written by Pandit Chandradhar Sharma Guleri, but he died without finishing the project. It was only after Guleri's death that Shyamsundar Das worked on it rather unwillingly. In the Preface to the first edition, Shyamsundar Das says:<sup>5</sup>

I very much desired that some other scholar should accomplish the work of Guleriji. But, my efforts in that direction failed.

By and large, it was a successful attempt if viewed in the context of the linguistic studies on Indian languages in the early twenties. Shyamsundar Das had the following aim:

...that a glimpse of the fundamentals of linguistics should be given, and the relationship of modern Indo-European languages, especially that of Hindi, should be shown. I did not intend to write a book which would gain respect of linguists, nor was I competent to do so. (Preface.)





This book follows the earlier works of such linguists as Bopp, Bhandarkar, Max Müller, Grierson, Beams, Kellogg, Wulner and Gune.

In 1925, that is, about four years after Shyamsundar Das published his book, Mangaldev Shastri published his Tulnātmak bhāṣāśāstr athvā bhāṣāvijñān. This book is basically influenced by the nineteenth century comparative school and the 'comparative' bias is evident in the title and the sub-title. The sub-title reads 'an explanation of comparative linguistics and a simple and easy analysis of comparative study of various languages of the world.' Mangaldev Shastri had the advantage of working at Oxford and he returned to India at the end of 1922.

There was a gap of about two decades till another significant book appeared, i.e. Baburam Saksena's Sāmānya bhāṣāvijñān (Allahabad), 1943). It ran into seven editions by 1965. At the time of its publication, this book was considered by S.M. Katre, among others '...probably the first scientific contribution in an Indian language to the doctrines of general linguistics.' (see p. 359, fifth edition).

A majority of earlier editions of Saksena's book are comprised of twenty-six chapters which are divided into two parts. In the first part there are twenty chapters and two appendices. The second part has six chapters and two appendices. The various editions of the book were revised and enlarged. I shall have more to say about its revised editions later.

Considering the linguistic literature available in Europe on general linguistics between 1920 and 1943, and the interests of the authors, the two books by Shyamsundar Das and Baburam Saksena are important. Shyamsundar Das's book was written six years after the publication of Leonard Bloomfield's Introduction to the Study of Language (1914). Saksena's book belongs to a period when writing on general linguistics was very limited even in the west, and general linguistics had not been established as an autonomous discipline in many universities. It was not until 1944 that the first Chair of General Linguistics was established in Great Britain and was held by J.R. Firth till 1956.

The picture of linguistic studies in Hindi did not change until 1950. During this period a few studies on Hindi did appear, e.g.,



Hindi Bhāṣā by Dhirendra Varma. In this period, whatever little work on general linguistics there was formed part of the curriculum of the post-graduate degree in Hindi which included a paper on, what is termed, Hindi linguistics. In this paper one or more books on general linguistics were required reading. This paper was later extended to the B.A. classes, too. It was mainly for this type of student that in 1951 Bholanath Tiwari published his Bhāṣāviज्ञान (Allahabad). I shall discuss this book and its revised editions in this paper. In the Preface to its first edition Tiwari says:

While studying linguistics for the M.A., I realized that inspite of scholarly books in Hindi or English, there is not any book which would include all the expected material for an average reader. It was this realization that motivated the writing of this book.

This book has an introduction by Dhirendra Varma in which he attempts to put the work in the general context of available linguistic literature in Hindi. He writes:

There is such a shortage of books on linguistics in Hindi that any book on this topic will be welcomed by the lovers of the Hindi language.

That proved prophetic and this book ran into six editions up to 1967. It is still prescribed at the B.A. and M.A. levels in most of the universities in the so-called Hindi area.

### 3.0. REVIVAL OF LINGUISTIC STUDIES IN INDIA AND ITS IMPACT ON HINDI:

In order to see things in the right perspective, a digression is needed here. It is perhaps well known that from 1953, plans were initiated to give a new direction to then existing insignificant facilities for teaching and reasearch in general linguistics in India. The credit for it goes to the Deccan College Research Institute in Poona which initiated a program for developing linguistic studies in India in cooperation with the Rockefeller Foundation of New York. The leadership for this project was provided by S.M. Katre.<sup>6</sup> The result of the faculty exchange and the summer schools programs was that a large number of scholars and students were attracted to this new field.



It was then, as a result of the program, that quite a few books were written in Indian languages on general linguistics. Some of the earlier published books, for example, Baburam Saksena and Bholanath Tiwari, were revised and enlarged. It was again after this period that Bholanath Tiwari compiled Bhāṣāvijñān Kōṣ (Varanasi, 1964). This makes Hindi perhaps the only Indian language which has such a dictionary of linguistics.

The upsurge of publications on general linguistics in Hindi was significant. Some of the better known works of this period are listed below in two groups, i.e., (1) Introductory courses, and (2) Bazar-notes.

1. Introductory courses. Dhall, Golak Behari: Dhvani Vijñān (Prem Book Depot, Agra, 1958); Dwivedi, Devishankar: Bhāṣā aur Bhāṣikī (Laxminarain Agarwal, Agra, 1964); Gautam, Manmohan: Saral Bhāṣā vijñān (Hindi Sahitya Sansar, Delhi, 1965); Mehrotra, Ramesh Chandra: Bhāṣeshapā (Arora Printing Press, Raipur, 1968); Sharma, Devendranath: Bhāṣā Vijñān kī Bhūmikā (Radhakrishna Prakashan, Patna, 1966.); Singh, Amarbahadur: Bhāṣā Śāstr Praveśikā (Ramnarainlal Beniprasad, Allahabad, 1965); Singh, Ramlal: Bhāṣā-Darśan (Vidya Mandir, Varanasi, 1963); Tiwari, Udai Narain: Bhāṣā Śāstr kī Rūprekhā (Leader Press, Allahabad, 1963).

2. Bazar-notes. Mehrotra, Rammurti: Bhāṣā vijñān Sār (Nagari Pracharani Sabha, Varanasi, 1946); Saroj, Bharat Bhushan: Bhāṣā vijñān (Hindi Sahitya Sansar, Delhi, 7th edition, 1967).

4.0. THEORETICAL FOUNDATIONS OF LINGUISTIC COURSES IN HINDI: I shall now attempt a general survey of some of the above mentioned works. This is not supposed to be a detailed review; the aim is to focus attention on some of the more important points in some selected works.

Let us first examine what the writers understand by these two basic and crucial linguistic terms, linguistics and grammar.

I would like to argue that in Hindi these two terms are not understood in the same sense as they are understood in contemporary general linguistics. What is more important, it can also be shown that these studies do not present even the later nineteenth century view of linguistics which was adopted by the so-called structuralists. Consider the following:





Bhāṣā vijñān, Mangal Dev Shastri (p. 2).

The meaning of linguistics is the science of or about language... There is a great difference between the 'knowledge' and 'science' of anything. By 'knowledge' or 'general knowledge', we mean only the knowledge about the form of a thing. But upapatti-sahit knowledge is called science. In this we are not satisfied only with the form of a thing, but investigate the reason of that form.

It is an interesting definition, but has comparativist bias as is clear from the following: (p. 2)

The main factor which separates science from general knowledge is its comparative nature.

And he rightly claims: (p. 3)

In reality it is this comparative reaction which has developed the science of language.

Bhāṣā vijñān, Shyamsundar Das (p. 1)

Linguistics is that science which analyses and explains different parts and forms of a language.

Bhāṣā vijñān, Bholanath Tiwari

Linguistics is that science which involves descriptive, historical, and comparative study not only of a particular language but of [languages] in general. It discusses the growth, structure, nature, development and determines principles for all these.

There is no sense in my multiplying here the definitions given in the other books. In most of the earlier books, this type of definition has generally been followed. In two recent works linguistics is defined in the following terms: Ramlal Singh in his Bhāṣāśāstr (p. 333) repeats the above definition of Tiwari. According to him, linguistics follows descriptive, historical and comparative methods and presents logical (tarka sanghat) research and analysis about the written and spoken language. It includes, as Tiwari also says, principles and rules about a particular language or languages in general. In Saral Bhāṣāvijñān, Manmohan Gautam considers linguistics that science which uses historical and comparative methods in order to present a scientific explanation about the growth, structure, nature, development and decay of a language.



After a very casual look at these definitions one can make the following observations. First there is no clear indication of what is meant by linguistics as an area of human knowledge. The impression given is that it presents comparison and structures of languages. According to these definitions, it also sets principles (śidhānta) but it is not mentioned what is meant by 'principles'. Second, the job of linguistics is seen as one of collecting the facts and presenting the data. These facts, it is claimed, may further be enumerated scientifically (vaijñānik vyākhyā). It is never made clear what a scientific explanation is say, as opposed to a non-scientific explanation. The clues which are there suggest a deep impact of ill digested behavioristic (and non-mentalistic) attitudes. In the very recent publications too, the dichotomy between the mentalistic and non-mentalistic attitudes is not even mentioned.

It is unfortunate that no clear ideas are presented about the notion grammar either. It is difficult to understand why a rather trivial and one sided concept of grammar has developed in Hindi. In these works the term 'grammar' is understood primarily in the sense of 'usage'. Notice that this cannot be explained away as the influence of structuralism since, in the structural literature too, the distinction between the three uses of the term 'grammar' (usage, description and rules) is maintained. In fact a closer look at the earlier linguistic literature reveals that in much earlier works (e.g., Henry Sweet) this distinction between the different uses of grammar was maintained. Consider, for example, the following definitions:

grammar presents the factual information about a language, but linguistics analyses that material and solves the question of the why and how of that material. (Amarbahadur Singh, Bhāṣā Śāstr praveśikā p. 16).

The area of grammar is applied. It lays emphasis on the current usage of a language... (*ibid*, p. 7)

...grammar only collects the sounds and word-forms in a factual way and linguistics shows its use. (Baburam Saksena, Samānya Bhāṣāvijñān, p. 37)

The meaning of the term 'grammar' is segmentation. (*ibid*, p. 12)

Grammar gives the standard form of a language. It is description-oriented. It concentrates mainly of the applied





aspects of language. (Bholanath Tiwari Bhāṣyaviññān p. 13).

These definitions of the term 'grammar' are not very close to how this concept is used in current literature, and how it was used earlier by serious 'traditional' grammarians. Notice, for example, the following definitions of 'grammar':

The formalized grammar is intended to be a characterization of the abilities of a native speaker... We would like the structural description to be the basis for explaining a great deal of what the native speaker knows to be true of speech events, beyond their degree of well-formedness. (Noam Chomsky: 'Explanatory Models in Linguistics' in Logic, Methodology, and Philosophy of Science, Stanford, 1962.)

or

Grammars answer the question: What does the speaker know about the phonological and syntactic structures of his language that enables him to use and understand any of its sentences, including those he has not previously heard. (J.J. Katz, J.A. Fodor, 'The Structure of a Semantic Theory' in Language, 1963, p. 172.)

The above discussed definitions of the concepts grammar and linguistics in Hindi reveal that the goals set for linguistic descriptions in terms of the underlying theory are rather uninteresting. A textbook writer in linguistics has to make a basic decision on how to interpret the terms linguistics and grammar before he embarks on the project of textbook writing. It is this decision which determines the planning, organization and presentation of a textbook (see section 6.0). It seems to me that a large number of textbook writers have failed to make this initial decision. The result of this is that most of the textbooks give the impression of being undigested, badly organized, rehashes of English textbooks with no underlying theory to present a consistent linguistic approach.

5.0. THE CONTENT OF AN INTRODUCTORY LINGUISTIC COURSE: On general linguistics the representative textbooks in Hindi are by Shyamsundar Das, Mangaldev Sastri and Baburam Saksena. It seems that these three have set the model for what a textbook on general linguistics should contain. For these three, (as Shyamsundar Das acknowledges) the models have been Bopp, Bhandarkar, Max Müller, Beams, etc.



In Shyamsundar Das the eight chapters treat the following topics: Introduction: language and speech; the classification of languages; sound and sound change; morphology; semantics; the development of Indian scripts; prehistorical discovery; a linguistic description of vowels and consonants of Hindi. Baburam Saksena's course is more sophisticated and much more elaborate than others and follows the pattern of general linguistic courses which were available in Europe during that period. Note, however, that this can be said about the earlier editions only, and not about the recent editions which I shall discuss later in this paper.

Table I (see following page) presents the analysis of the content of certain selected introductory linguistic courses:

6.0. PLANNING OF INTRODUCTORY COURSES: By planning of a textbook I mean the organization of the material from the point of view of content and presentation. I shall also briefly discuss the research methodology adopted in these courses.

On the whole the presentation of the introductory courses does not show that these are meant for a well defined group of students, nor do they demonstrate that there is a particular curriculum for which these books are written. The content of these textbooks varies significantly, though the variation in the quality is of very insignificant degrees. On the one hand, we have Udai Narain Tiwari's book highly restricted in scope, while on the other hand, there is Bholanath Tiwari's book with its extremely superficial treatment of topics. In Udai Narain Tiwari there are ten chapters (pp. 1-203), and ten Appendices (pp. 206-304). Out of 203 pages there are 44 pages of Introduction, and surprisingly we find immediately after that a chapter on 'Linguistic Survey' (pp. 44-74) which starts with Grierson's work. Then again, Chapter Seven (pp. 180-193) is on dialectology. Chapter nine is on 'Linguistic Geography'. In Bholanath Tiwari, the Table of Contents for a book of 626 pages runs into twelve pages (pp. 12). This is just to show how the range of the textbooks varies.

I have already mentioned that Hindi is still developing a 'register' of linguistics (see section 8.0 for further discussion). We naturally









do not have a 'cline' of styles in Hindi which we find, say in English.

All the introductory courses read like laboured translations of English introductory courses. The three books which read well are Devendranath Sharma (1966), Devishankar Dwivedi (1964) and parts of Ramesh Chandra Mehrotra (1968). However, one has to be very cautious in using these in the classroom.<sup>7</sup>

7.0. CONTEMPORARY LINGUISTICS AND GENERAL LINGUISTIC STUDIES IN HINDI: I shall use the term 'contemporary linguistics' in two senses. First, as a wider concept referring to the rethinking in linguistics which became apparent around 1940, and gained a momentum after the mid-fifties. This general rethinking was not necessarily restricted to one part of the world, nor to a particular school of linguistics. Second, I shall particularize this use to refer to those important breakthroughs which have been labelled under different schools, e.g., the Transformational-Generative, the Tagmemic, the Prosodic, and the Scale and Category.

In the following table, I have summarized the information on contemporary linguistics in selected introductory courses (see Table II).

TABLE II: INFORMATION ON CONTEMPORARY SCHOOLS OF LINGUISTICS  
IN INTRODUCTORY COURSES

Name and author of introductory course	Pages devoted to contemporary linguistics	Contemporary 'Schools'				
		TG	Tagmemic	Prosodic	Scale	Prague
<u>Bhāṣā aur Bhāṣikī</u> Devishankar Dwivedi	--	--	--	--	--	--
<u>Saral Bhāṣāvijñān</u> Manmohan Gautam	--	--	--	--	--	--
<u>Bhāṣāvijñān kī Bhūmikā</u> Devendranath Sharma	3	--	--	--	--	--
<u>Bhāṣāsāstr Praveśikā</u> Amar Bahadur Singh	--	--	--	--	--	--
<u>Bhāṣā Darśan</u> Ramlal Singh	--	--	--	--	--	--
<u>Bhāṣāvijñān</u> Bholanath Tiwari	11	4 lines	--	1 1/4	1 1/4	1/2
<u>Bhāṣāsāstr kī Rūprekha</u> Udai Narain Tiwari	--	--	--	--	--	--



The content on contemporary linguistics in the above table is very limited. If we take a closer look at this very meagre content, our feeling of discouragement changes to dismay. The reason for this is that this very meagre percentage is misleading. Only a trickle of contemporary linguistics is bad, but what is worse is that even that is either wrong, or misleading or both. This is unfortunately true of Baburam Saksena's recent editions of Samānya Bhāṣāvijñān, and more true of Bholanath Tiwari and others.

After reading whatever little has been written on contemporary linguistics, according to these books the following seem to be the basic tenets of the current trends in linguistics.

1. Phonemics as the basic breakthrough: In Bholanath Tiwari (3rd edition, 1961, p. 557) under 'Modern Linguists, Schools and Trends' we have statements such as 'phonemics is the contribution of this school [American school] and on this basis it is also called the phoneme school.' In Sāmānya Bhaṣāvijñān (6th edition, p. 87) Baburam Saksena writes:

The development of phonemics is most important among the current developments of linguistics. This branch of linguistics has developed in America by the researches of American scholars. The great propounder of this science [Phonemics] is Kenneth L. Pike.

This statement is theoretically misleading and historically wrong. Gautam (Saral Bhaṣāvijñān, p. 197) is less enthusiastic about phonemics but says that [phonemics] is an important part of modern linguistics. On the same page, however, he comes up with a startling statement that 'bhāṣādhvani [speech sound] and dhvani-grām [phoneme] have the relationship of an individual and group. From a theoretical point, says Gautam, 'bhāṣādhvani is more important....' (This book had run into three editions by 1965!)

2. Semantics and linguistics: The idea that semantics has a disputed status in linguistics somehow got associated in Hindi with contemporary linguistics as a whole. The result is that one finds statements such as 'This school [the American School] does not consider semantics under meaning.' This is again from Bholanath Tiwari (3rd Edition, p. 575).





It is interesting that he has put this remark in bold-face.

On reading pages 22-24 (7th edition) of Baburam Saksena one again gets the same impression. Uday Narain Tiwari (Bhāṣāśāstr kī Rūprekhā, p. 15) says:

The meaning changes with time therefore modern linguists do not attach special importance to this branch [semantics] of linguistics.

In Dhvanivijñān (p. 9, Appendix), Dhall writes:

Descriptive linguists get the knowledge of the method of expression of a language, not its meaning.

This misunderstanding seems to have developed by following the Bloomfieldian tradition too closely. And, by not trying to understand the nonmentalistic behavioristic arguments of Bloomfield and his group. It is evident from C.C. Fries' paper, 'Meaning and Linguistic Analysis', (Language 30, 1954) that there were not necessarily theoretical constraints on including meaning in linguistics, but merely procedural problems. I think a short digression on the question of semantics in linguistics will not be out of place here.

In linguistic theory after 1940 there was not one approach on the status of semantics in linguistics. And Bloomfield's was merely one of the many approaches. He was throughout fighting against what he called the traditional 'mentalistic' approach to language. This led him to concentrate on form only (as opposed to content), since, as he says, a linguist has no 'scientifically' precise means to define words like hate, love, anger, gay, sad, hence the statements of meaning are the 'weak point' in language-study, and will remain so until human knowledge advances very far beyond its present state' (Language, p. 140). He found a solution to it by replacing the mentalistic approach by the mechanistic approach; by accepting the duality of form and content. Bloch, Trager, Harris, Fries, etc. have basically accepted this approach, but in America itself the Tagmemic group and the Sapirians did not necessarily follow this line. Note, for example, the following remarks by K.L. Pike:

We feel that language is a form-meaning composite. In our view, neither form nor meaning must ultimately be set up as a unit in its own right without reference to the other. (Language in Relation to a Unified Theory of the Structure of Human Behavior p. 55)



And again:

In the theory which I am developing, however, I am attempting to keep form and meaning rigidly joined as a form-meaning composite ('Meaning and Hypostasis' Georgetown Monograph No. 8, p. 137).

On the other side of the Atlantic, J.R. Firth was developing a 'monistic' theory of language known sometimes as 'spectrum analysis' or 'level analysis'. It was different from the structural formalism of Bloomfield and his group. The first theoretical paper ('The Techniques of Semantics' T Phs, 1935) on this approach was published only two years after the publication of Bloomfield's revised and enlarged edition of Language. In this paper, Firth approached language with a different view, which might help one to 'cease to respect the duality of mind and body, thought and word.' This is perhaps Firth's first disagreement with the formalists, and it marks him separate -- and for some time isolated him -- from the linguistics of the thirties.

I think this digression was essential to show how books on general linguistics in Hindi present only one side of the controversy.

3. Primary medium is 'spoken' language and not 'written' language: In all these books this dichotomy is built as a theoretical essential of modern linguistics. That, obviously, is not true. One book which has taken it to a ridiculous extreme is Devishankar Dwivedi (Bhāṣā aur Bhāṣikī, p. 9). Consider the following:

A language is not 'read', it is 'learnt'. For it [learning] we have to live among the speakers of a language, and have to speak the way they speak...we have not been 'learning' the English language. In reality we have been reading it. We have not learnt it from the English people, but from English books. A language is spoken, it is not written or printed. That is why what we have learnt from the English is not English, but a debased form of English. It is called by some foreigners 'babu English' or 'Indian English'.

It is common sense that primary medium of language is the spoken medium and in the classical tradition, for certain reasons the written medium was emphasized. As a reaction, in modern linguistics it was repeatedly said that the written medium is secondary. It is very difficult to understand in what sense it became a theoretical tenet of contemporary linguistics.

It is surprising that no book even mentions anything about the insightful and deep problems which modern linguists have raised, even about



the status of the Phoneme, the question of the levels, the goals of linguistics, etc. It is not possible to discuss all the questions in this paper, but one is tempted to refer briefly to some of these. Some basic points which interest contemporary linguistics are, among others:

- (a) to investigate the underlying knowledge of a native speaker which gives him competence in a language;
- (b) to investigate how a native speaker uses that knowledge which his competence gives him;
- (c) to see how a native speaker acquires that knowledge. (That is, what is the process of development from an infant speaker to a fluent adult speaker.);
- (d) to arrive at the universals of human languages.

It is answers to these questions which will give us insights into the complex activity of speaking and hearing. In their work Chomsky and others have demonstrated that taxonomic descriptions have failed to answer any of these questions. In at least one main school of linguistics it is argued that it is only through 'mentalistic concepts' that these critical questions can be answered.

The second digression is over, now let me come back to the introductory courses. I have already shown that the content on contemporary linguistics is extremely meagre in these books. The questions now are: Is it reliable? Does it show any understanding of the current theoretical questions? The answer to both these questions unfortunately is in the negative.

A large number of these courses have both historical inaccuracies and wrong information. The examples of historical inaccuracies may be provided by the following two excerpts from Sāmānya Bhāṣāviṣṭhān (7th edition) by Baburam Saksena. Commenting on the phoneme the author says:

This new branch of linguistics has been developed by the researches of American scholars. (p. 87)

Note also:

Structural linguistics has recently given attention to the analysis of sentences. By establishing the method of immediate constituents Roulen Wells has presented a new method of sentence analysis. (p. 24)





By wrong information I mean statements such as the following in Bholanath Tiwari's Bhāṣāvijñān (1961 and 1967). In this book the British School (p. 612) has been divided into three subschools i.e., the English School, the London School and the Contrastive Analysis School. By the English School Tiwari means the Sweet-Jones Tradition. In the London School he includes J.R. Firth and lists the characteristics of this school as follows (p. 612):

(a) According to this 'school' the main thing about a phoneme is the capacity to bring out the difference in meaning (substitution counter) [sic];

(b) 'He [Firth] has done good work on prosodic features'

I can understand what he means by the second statement but the first statement is unintelligible to me. The Contrastive Analysis School is claimed to have been initiated by M.A.K. Halliday. Its characteristics are:

Firth's follower Halliday has founded a new method called the Comparative method. In it, on the basis of the comparison of forms, sentences, subsentences, those rules are found which are not shared by the two languages concerned. (p. 612)

It is very difficult to understand what is in Tiwari's mind and in what sense what he has said here is related to the systemic grammar of Halliday. In the third edition of the same book he puts Householder with Firth, Ward and Trim. Then there is an evaluative statement such as, 'the importance of this school is less than that of the other three.'

Tiwari then breaks the American School (p. 613-14) into the following: Sapir School, Ann Arbor School, Bloomfield School, Harvard School, and Transformational School. On the Transformational School, the following information is given:

This school is of Noms [sic] Chomsky. An expert in mathematical linguistics and information theory, Chomsky originally belongs to the Bloomfield School. He is also influenced by the principles of the Harvard School. (p. 615)

The worst is yet to come, and would give a shock to H.A. Gleason. The book claims that 'on the basis of Chomsky's theory, Gleason has done good work on English.' (p. 615)

In Bhāṣāśāstra kī Rūprekhā, Udain Narain Tiwari has not gone beyond structural linguistics, and Devendranath Sharma (Bhāṣāvijñān kī Bhūmikā)



has less than two pages (326-27), on 'The Current Trends in Linguistics'. There is hardly any information on the trends, but it merely mentions the branches of linguistics, i.e. Descriptive Linguistics; Dialectology; Tonetics; Phonemics; Linguistic Geography.

8.0. DEVELOPING A LINGUISTIC REGISTER IN HINDI: The Hindi language has still not developed a register for linguistic writing. One of the characteristics of a register is that there is a more or less standardized terminology. In certain cases such registers also have a characteristic style which may be defined in terms of its grammatical characteristics. In Hindi generally a high Hindi style is used for linguistic writing. The problem, however, is that of technical terminology.. (For further discussion of this point see Sharma.) I would like to elaborate on this point below. However, I do not propose to provide any suggestions on the question of a technical terminology. My aim is to present the situation as it presently exists in Hindi, and to lay my fingers on those problems which a teacher and/or a student of general linguistics faces while going through the fast increasing body of linguistic writing in Hindi. Let us consider some of the points below. There are certain textbooks in which a more or less uniform set of technical terms is used, thus making it possible to read various works for reference. There are other works in which a list of technical terms is given (both Hindi-English, English-Hindi), and at places alternate terms are provided. In his Dhvanivijñān, Golak Behari Dhall has done it frequently. (See Dhall's review by Kachru, Y. 1959.) But the use of alternate sets of technical terms is not restricted to Dhall's work only. There are other introductory books which come up with an entirely new set of technical terms. A good example to illustrate this point is Bhāṣā aur Bhāṣikī by Devishankar Dwivedi (Agra, 1964). On the question of technical terminology Dwivedi writes:

It will not be improper to say a few words about the technical terms. I have not hesitated in changing the current [technical] terms if I was not satisfied with them.

His arguments for not using the already existing terms are based on two reasons. The first reason is the length of the word. The terms





dvanigrām, dvanīṣreṇī are lengthy. The second reason is the use of the productive processes of Sanskrit. He prefers the term svanim to dvanigrām or dvanīṣreṇī. He immediately warns the reader that

There is no need to get startled by its -im affix. It is present in Hindi words such as rakhtim, svaṇim. In these words one gets the feeling of ābhās or bhāvānayan. That is expected in svanim also. (p. 2)

He sums up his ideas about the question of technical terminology in the following words:

So far as I am concerned, I do not hesitate in creating new roots if they sound like the English terms and follow the pattern of Sanskrit and Hindi. I have not translated the 'vowel triangle' as svatrickon but as svaṛcātṛṣkon. I have changed kanṭhya to utkanṭhya. (pp. 2 and 3)

Dwivedi's observation gives some idea about the vexed question of the linguistic terminology in Hindi. This problem, however, is not restricted to Hindi but applies to all the Indian languages. In the case of Hindi the problem is more difficult for the following reasons, among others. There is no uniformity in the use of the terminology. There is no consistency in the use of one set of terminology by the same author. There is no serious effort to approach the problem of standardization in a realistic sense. The government-sponsored agencies which have been funded to undertake the work have made the problem more difficult and their attempts have been counter-productive. In the following table (see Table III), I have attempted to show the disparity in the use of the basic linguistic technical terminology.

In the preceding pages I have attempted to show that the current available literature on general linguistics in Hindi is inadequate from many points. I do not, however, subscribe to the idea -- which is often repeated by sources antagonistic to Hindi -- that the Hindi language is not 'developed' (whatever the term means in this context) to convey the subtle content of linguistics or other specialized fields. I feel that on the whole that specialized knowledge is not language-bound. What one can convey in English, can be put across in Hindi, Kashmiri or Yoruba as well and as easily as in English. Communicability is the main feature of natural languages. What is language-bound is the notion



TABLE III: THE DIFFERENCES IN THE USE OF TECHNICAL TERMS  
IN HINDI LINGUISTIC LITERATURE

Author	Allomorph	Allophone	Morpheme	Morphology	Phoneme	Phonolo
D.S. Dwivedi	<u>sanmarah</u>	<u>sansvan</u>	<u>marshim</u>	<u>mārshimī</u>	<u>gvanim</u>	--
G.L. Dhall	--	<u>sansvan,</u> <u>upa, grām</u> <u>shreṇī, upas-</u> <u>vangrām</u>	<u>padgrām</u>	<u>padvijñān</u>	<u>dhvani-</u> <u>grām,</u> <u>dhvani-</u> <u>shreṇī,</u> <u>svangrām</u>	<u>dhvani-</u> <u>kriyāvi</u>
M.M. Gautam	--	--	<u>rūpmātrā,</u>	<u>rūpvičār</u>	<u>dhvanis</u> <u>shreṇī</u> <u>dhvanimā-</u> <u>trā,</u> <u>dhvanigrām,</u> <u>dhvanitātva</u>	<u>dhvanis</u> <u>cār,</u> <u>dhvani-</u> <u>viññān</u>
A.B. Singh	--	--	--	--	<u>svangrām</u>	--
B.R. Saksena	--	<u>dhvani-</u> <u>grām</u> <u>vyastī</u>	<u>rūp</u>	<u>padracnā-</u> <u>viññān</u>	<u>dhvani-</u> <u>grām</u>	--
B. Tiwari	<u>sanrūp</u>	--	<u>rūpgrām</u>	<u>rūpaviññān</u>	--	--
U.N. Tiwari	<u>sahapad</u>	<u>sahsvan,</u> <u>sasvan</u>	<u>padgrām</u>	<u>rūpracna-</u> <u>shāstra,</u> <u>padvijñān</u>	<u>dhvanigrām</u> <u>svangrām</u>	--
L.S. Varshneya	--	--	<u>rūpmātrā</u>	<u>ākriti-</u> <u>vičār,</u> <u>rūpvičār</u>	<u>dhvanimātrā</u> <u>dhvanishreṇī</u> <u>svangrām</u>	



'register'. It is language-bound in the sense that over the years one language may have developed a register (that is, a specialized or restricted use of language) of say physics, linguistics, etc. and another language may lack that particular register at a given time. The problem of Hindi, like that of many other languages in the world, is that the register of general linguistics is still not established. It is developing; naturally, the pangs of initial development are there. Thus, Hindi as a language has the potential of developing such a register or registers. The question then is: Why is there not then a single useful book on general linguistics in Hindi? An answer to this question will, obviously, be a subjective one. It seems to me that the primary reason is that a clear overall view of the field is not available to the students of Hindi. After reading the books on general linguistics in Hindi one gets the impression that linguistics is essentially treated as a technique of analysing language data which has a procedural apparatus used at various 'levels'. One also wonders if these procedural techniques are viewed as part of any theoretical framework.

Great harm has been done to the development of linguistic literature in Hindi by uncritically translating English textbooks. By uncritical translation I mean not appreciating seriously the theoretical differences between say Gleason (1961), Bach (1964) and Halliday et al. (1964). The result is that a student gets usually bad translations of English textbooks, ill-assimilated and badly put together.

10.0. GENERAL LINGUISTICS COURSES IN HINDI VS. THE STUDENT: A book, like language, has two aspects. There is the aspect of production, and also the aspect of reception. On the receiving end one has to consider the reading public, too. In 'register-oriented' writing, it is often a well defined group of students who read a specialized book with a specific goal. In reviewing the general linguistic literature in Hindi two things are to be considered. The first is whether the content put in a textbook belongs to general linguistics. Second, we also have to ask ourselves, without any language bias, whether or not a student learning general linguistics through Hindi medium gets the same body of





knowledge that a student gets through the English medium? In answering this question, perhaps, language loyalty should be superceded by what may be termed academic loyalty. The answer definitely is that with the present available linguistic resources in Hindi, all that a student in Hindi gets is some idea about the technical apparatus (terminology) of general linguistics, and some idea about the basic procedural or descriptive techniques. He does not get any insights into general linguistics as a discipline. And no idea at all about the development of current linguistics and the issues involved. In fact, most of what he gets in the name of varṇanātmak bhāṣāvijñān or ādhunik bhāṣāvijñān is neither contemporary (ādhunik) nor linguistically insightful.

11.0. NEW INSIGHTS ON GENERAL LINGUISTICS IN HINDI: At the outset, as one of the aims of this paper, I said I would attempt to discuss those insights which are found in Hindi on general linguistics, and which may be of interest to non-Hindi knowing Indian and/or foreign linguists. I find this a rather difficult task. The main reason for this difficulty is that there is not a single work in Hindi which, one could claim, has developed out of any consistent thinking on general linguistics with a well defined underlying linguistic framework.

Perhaps it should be mentioned here that in many books (e.g. Baburam Saksena, Ramesh Chandra Mehrotra and Devishankar Dwivedi) there are quite a few interesting observations on the description and analysis of Hindi. But, so far as general linguistics is concerned, one finds the observations of the following type: First, disagreement with western linguists on some procedural and/or terminological questions. It is easy to see that such disagreement is not based on any theoretical basis. This develops either out of a misunderstanding, or inability to view a statement of a western scholar in a proper theoretical background. Second, ignorance of a person to see what issues are at stake. While reading the books on general linguistics in Hindi one soon learns to attach no importance to statements such as 'I do not agree with it', or 'in my opinion'. After such statements what often follows is either something amusing or ridiculous or both. For example, consider the



following statements in Bholanath Tiwari: In 'praveś' (p. 4-5) he shows disagreement on a basic point, i.e., what are the branches of synchronic linguistics, and says:

Since now a new method of study termed 'structural' has been presented, I am in this favour that synchronic linguistics should be divided into: Descriptive linguistics and Structural linguistics.

Then he discusses these so-called divisions of descriptive linguistics and presents Gleason's An Introduction to Descriptive Linguistics as a model of his concept of 'descriptive' linguistics, and Harris' Methods in Structural Linguistics as his model of 'structural' linguistics. Then on the same page he continues:

It should be mentioned here that descriptive linguists do not consider semantics under linguistics, but the writer is not in agreement with their view. (p. 5)

Thus the confusion for a student starts right on the fourth page of the book. Then a level (p. 15) of 'Wordology' is established. And Tiwari immediately says 'I have coined this term. Generally only four levels (branches) of linguistics are accepted, i.e. Syntax, Morphology, Semantics and Phonetics' (p. 15). We are not told in what sense his 'Wordology' is different from Firth's, Halliday's and Pike's 'Lexis'. And what is more important, what happens to Phonology? In the book, as the pages increase the confusion increases. On page 18 under the branches of linguistics are listed: stylistics, dialectology, metaresearch, transformation, metasprog, morphophonemics, and glossomatics.

In most of the works there is a very reassuring mention of Indian linguistic traditions, but in reality what we find is historical-biographical information about earlier Indian linguists without any mention of the significance of their work or their insights on language.

12.0. CONCLUSION: The analysis of general linguistic studies in Hindi which I have presented so far is discouraging, and to a large extent alarming. It is discouraging because two precious decades after 1955 have been wasted in fruitless individual research of no serious insights and substance. It is alarming because linguistics in the Hindi medium Universities is getting isolated, and is completely cut off from the mainstream



of contemporary world linguistics. The Hindi linguistic scholarship is at least one generation behind the mainstream of current linguistics, and our textbooks on general linguistics in Hindi are a sad commentary on the research which we carry out to spread and enrich Hindi.

In a survey like the present one, it is the conclusion that is difficult to write. I shall, therefore, present below the views of two Indian linguists who belong to two generations of linguistic scholarship and are trained in two different traditions. First, I shall give the views of a senior linguist, Uday Narain Tiwari. He says:

Currently, so far as the learning and teaching of linguistics in the Hindi area is concerned, the Hindi area is left far behind as compared with the non-Hindi areas. Whatever theoretical knowledge is imparted in the name of linguistics in the Hindi area is stale (bāsī) or wrong (aśhūdh). (p. 4)

Second, I shall sum up the opinion of a younger scholar, Devishankar Dwivedi. Dwivedi thinks that whatever books are available in Hindi on the topic of linguistics, they present 'either, the materials of those days when linguistics was in its infancy, or an uneatable mixture [khiṇī] of the old and the new, or [they] cram undigested ideas of the new and the old without any thinking' (Bhāṣhā aur Bhāṣikī, p. 1). He further says that on a deeper look what one finds is superficiality and unorganized materials (ibid). On the question of the originality in such literature, Dwivedi says the following:

In the name of originality (mauliktā) such childish things are said which look neither pathetic nor funny. (ibid)

What he perhaps means is that they look just childish. This obviously is a very alarming picture, and a very confusing picture, too. But, as Uday Narain Tiwari and Devishankar Dwivedi confirm, it is the true picture.





## NOTES

<sup>1</sup>This is a revised and enlarged version of a paper presented at the Conference on Current Trends in Indian Linguistics with Special Reference to Hindi on April 6, 1968, in New Delhi. This conference was organized by the American Institute of Indian Studies in cooperation with the Department of Linguistics, University of Delhi, India. My thanks are due to Geoffrey Hackman, Yamuna Kachru and Shikaripur Sridhar for their comments on an earlier version of this study.

<sup>2</sup>The term 'register' is used as a technical term which refers to a specialized variety of a language restricted in terms of its use. For further discussion see Halliday et al. (1964:87-98), and Braj B. Kachru (1966:261-3).

<sup>3</sup>See Braj B. Kachru (1967).

<sup>4</sup>Irach J.S. Taraporewala (1884-1956) joined the University of Calcutta as University Professor of Comparative Philology in September 1917. He studied comparative philology at Cambridge and later at Wurzburg University; Suniti Kumar Chatterji (1890-) was appointed Khaira Professor of Indian Linguistics at the University of Calcutta in 1922. He worked under Daniel Jones in London, and studied also under Jules Bloch and Antoine Meillet, among others; Sukumar Sen (1900-) was a student of both Taraporewala and Chatterji at the University of Calcutta. In 1954 he succeeded Chatterji as Khaira Professor of Indian Linguistics and he held this position till 1964 when he retired.

<sup>5</sup>The English translation of the excerpts from the Hindi linguistic texts given in this study provide a close approximation, no claim is made to one-to-one correspondence or exact translational equivalence.

<sup>6</sup>For a detailed discussion on this project see S.M. Katre, The Language Project at the Deccan College, Indian Linguistics 1957:18:197-224.

<sup>7</sup>As an example of the disappointing planning of the courses, let us consider the bibliographies provided in the books. In terms of the bibliographies these books may be divided into three categories. First there are courses which have no bibliographies, e.g., Devishankar Dwivedi (1964); Ramesh Chandra Mehrotra (1968); Mangaldev Sastri (1925); Amarbadhur Singh (1965). Second, there are those courses which have bad bibliographies. Perhaps it is better to have no bibliography than to have a book with a bad bibliography. For instance, Bholanath Tiwari (1951) has eighteen references under 'some leading books and journals' (p. 627). It is a bad bibliography for several reasons. The references are incomplete, in many cases only the first names or parts of the titles of books are given. Out of the eighteen names of authors, four names of authors are wrong, and two titles of books are wrong.

It seems to be one of the features of these books to treat bibliographies



as a nuisance which does not deserve special attention. I have already mentioned Bholanath Tiwari's book in this context. Baburam Saksena's otherwise good bibliography is ruined by the entries of the following type. On the one hand there are some entries according to first name of the author (e.g. W.S. Allen). On the other hand, in the same bibliography there are entries according to the last name of the author (e.g. Armfield, U.N.). In most of the bibliographies there are no references to works on contemporary linguistics. It seems Bloomfield (1933), Gleason (1961), Hockett (1958) and Pike (1947) are the latest works on linguistics for the Hindi scholars.

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SOME ASPECTS OF PRONOMINALIZATION AND  
RELATIVE CLAUSE CONSTRUCTION IN HINDI-URDU

Yamuna Kachru

1.0 The aim of this paper is to discuss the process of pronominalization in Modern Standard Hindi-Urdu (hereafter Hindi-Urdu) and to determine if the relative clause construction in Hindi-Urdu involves pronominalization. By pronominalization, I mean the process by which an occurrence of a noun or noun phrase is replaced by a reduced or suppletive form provided it is coreferential with its antecedent.<sup>1</sup> It is not claimed that all occurrences of pronominal forms in the language can be described in this way. Also, the phenomenon of reflexivization is not discussed in this paper.<sup>2</sup> The interesting theoretical question raised by a number of recent studies as to whether pronominalization is a specific rule or a set of conditions on anaphoric relations at various stages in a description will not be discussed in this paper.<sup>3</sup> Nevertheless, I am certain that the constraints, whether syntactic or semantic, discussed in this paper will have to be taken into account regardless of whether pronominalization turns out to be a transformational rule, or a set of conditions on acceptable surface structures.

I will confine myself here to a discussion of pronominal forms which occur, under appropriate conditions, in place of nouns or noun phrases.<sup>4</sup> Since both pronominalization and deletion of nouns or noun phrases under coreference are anaphoric processes of the same kind, I will discuss, wherever relevant, the proposed rule of Equi-NP-Deletion (hereafter Equi-NP) in Hindi-Urdu.<sup>5</sup>

2.0 A careful examination of Hindi-Urdu sentences makes it clear that pronominalization of nouns or noun phrases in the language is not independent of coreferentiality.<sup>6</sup> The following sentences illustrate this:<sup>7</sup>

(1.) ?əjəy ne ek lal kəmīz xərīdī or vinəy ne ek nīlī kəmīz xərīdī.

Ajay bought a red shirt and Vinay bought a blue shirt.

(1a.) \*əjəy ne ek lal kəmīz xərīdī or vinəy ne ek nīlī valī.<sup>8</sup>

Ajay bought a red shirt and Vinay bought a blue one.



- (1b.) \*əjəy ne ek lal kəmīz xərīdī or vinəy ne ek nīlī.  
 \*Ajay bought a red shirt and Vinay a blue.
- (1c.) əjəy ne ek lal or vinəy ne ek nīlī kəmīz xərīdī.  
 'Ajay' 'a' 'red''and''Vinay' 'a' 'blue' 'shirt''bought'
- (2.) əjit ne isliye ek mēhəngī kar xərīdī ki sumit ke pas ek mēhəngī kar thī.  
 Ajit bought an expensive car because Sumit had an expensive car.
- (2a.) \*əjit ne isliye ek mēhəngī kar xərīdī ki sumit ke pas vəh thī.  
 \*Ajit bought an expensive car because Sumit had it.
- (2b.) \*əjit ne isliye vəh xərīdī ki sumit ke pas ek mēhəngī kar thī.  
 \*Ajit bought it because Sumit had an expensive car.
- (2c.) \*əjit ne isliye ek mēhəngī kar xərīdī ki sumit ke pas thī.  
 \*Ajit bought an expensive car because Sumit had.
- (2d.) \*əjit ne isliye xərīdī ki sumit ke pas ek mēhəngī kar thī.  
 \*Ajit bought because Sumit had an expensive car.

The sentences in (1) and (2) involve indefinite noun phrases. In (1), they are partially identical, in (2), they are fully identical. The only way to reduce sentence (1) is to delete the identical parts of the preceding NP and gap backwards obligatorily. Since (2) involves fully identical but referentially distinct NPs, it cannot be reduced at all, neither pronominalization nor Equi-NP (either forward or backward) yield a grammatical sentence.<sup>9</sup> These examples are sufficient to make it clear that identity, whether full or partial NPs, is not sufficient for pronominalization in Hindi-Urdu.

2.1 Consider cases involving coreferential nouns and noun phrases:

- (3.) ?kiṣən aya or kiṣən so gəya.  
 ?Kishan came and Kishan went to sleep.
- (3a.) \*kiṣən aya or vəh so gəya.  
 Kishan came and he went to sleep.
- (3b.) \*vəh aya or kiṣən so gəya.  
 \*He came and Kishan went to sleep.
- (3c.) kiṣən aya or so gəya.  
 Kishan came and went to sleep.



- (4.) ?kiṣen aya or kiṣen ne ṭivī calaī.  
?Kishan came and Kishan switched on the TV.
- (4a.) kiṣen aya or usne ṭivī calaī.  
Kishan came and he switched on the TV.
- (4b.) \*kiṣen aya or ṭivī calaī.  
Kishan came and switched on the TV.
- (4c.) \*vəh aya or kiṣen ne ṭivī calaī.  
\*He came and Kishan switched on the TV.
- (5.) ?sīma or sīma kī bəhnē dillī ja rəhī hē.  
?Sima and Sima's sisters are going to Delhi.
- (5a.) sīma or uskī bəhnē dillī ja rəhī hē.  
Sima and her sisters are going to Delhi.
- (5b.) \*vəh or sīma kī bəhnē dillī ja rəhī hē.  
She and Sima's sister's are going to Delhi.
- (5c.) ??sīma or bəhnē dillī ja rəhī hē.  
Sima and sisters are going to Delhi.
- (6.) ?raj ne kəha ki raj kəl jaega.  
Raj said that Raj will go tomorrow.
- (6a.) raj ne kəha ki  $\begin{Bmatrix} mē \\ v\acute{e}h \end{Bmatrix}$  kəl  $\begin{Bmatrix} j\acute{a}u\breve{g}a \\ jaega \end{Bmatrix}$   
Raj said that he will go tomorrow.
- (6b.) \*usne kəha ki raj kəl jaega.  
\*He said that Raj will go tomorrow.
- (6c.) raj ne kəha ki kəl  $\begin{Bmatrix} j\acute{a}u\breve{g}a \\ jaega \end{Bmatrix}$   
\*Raj said that . will go tomorrow.
- (7.) ?mē ne bhūṣəṇ se kəha ki bhūṣəṇ ghər jae.  
?I asked Bhushan that Bhushan should go home.
- (7a.) mē ne bhūṣəṇ se kəha ki  $\begin{Bmatrix} tum \\ v\acute{e}h \end{Bmatrix}$  ghər  $\begin{Bmatrix} j\acute{a}o \\ jae \end{Bmatrix}$   
I asked Bhushan to go home.
- (7b.) \*mē ne usse kəha ki bhūṣəṇ ghər jae.  
I told him that Bhushan should go home.
- (7c.) mē ne bhūṣəṇ se kəha ki ghər  $\begin{Bmatrix} j\acute{a}o \\ jae \end{Bmatrix}$   
I told Bhushan to go home.





- (8.) ?mẽ ne bhūṣaṇ se sureṣ ke bare mẽ kəha ki sureṣ ghər jaega.  
?I told Bhushan about Suresh that Suresh will go home.
- (8a.) mẽ ne bhūṣaṇ se sureṣ ke bare mẽ kəha ki vėh ghər jaega.  
I told Bhushan about Suresh that he will go home.
- (8b.) \*mẽ ne bhūṣaṇ se uske bare mẽ kəha ki sureṣ ghər jaega.  
I told Bhushan about him that Suresh will go home.
- (8c.) mẽ ne bhūṣaṇ se sureṣ ke bare mẽ kəha ki ghər jaega.  
\*I told Bhushan about Suresh that will go home.
- (9.) ?ṣīla ne ramū kī kitab ramū ko de dī.  
?Sheela gave Ramu's book to Ramu.
- (9a.) ṣīla ne ramū kī kitab usko de dī.  
Sheela gave Ramu's book to him.
- (9b.) \*ṣīla ne uskī kitab ramū ko de dī.  
Sheela gave his book to Ramu.
- (9c.) \*ṣīla ne ramu kī kitab de dī.  
\*Sheela gave Ramu's book.
- (9d.) \*ṣīla ne kitab ramu ko de dī.  
\*Sheela gave the book to Ramu.

The sentences in (3-9) make the following apparent: Only forward pronominalization is grammatical in Hindi-Urdu, hence all the instances of backward pronominalization (the b sentences above) are ungrammatical. In coordinate sentences, if the coreferential NP is strictly identical with its antecedent, Equi-NP operates, otherwise pronominalization is obligatory, and both operate forward. In *ki*-complement sentences, either forward pronominalization or forward Equi-NP applies, one of these must apply. In a simple or coordinate sentence, if the antecedent is the head noun of a possessive phrase, only forward pronominalization yields grammatical sentences (only (5a) and (9a) are grammatical above).

The claim that only forward pronominalization is grammatical in Hindi-Urdu can be tested by considering another class of complex sentences, namely, the sentences with conditional clauses:

- (10.) ?əgər məntriṣī ne istifa de diya to məntriṣī pər mukədma cəlega.  
?If the minister resigns the minister will be prosecuted.



- (10a.) *əger məntriġi ne istifa de diya to un pər mukedma calega.*  
If the minister resigns, he will be prosecuted.
- (10b.) \**əger unhōne istifa de diya to məntriġi pər mukədma calega.*  
If he resigns, the minister will be prosecuted.
- (11.) ?*əger mā yehā aengī to mā ko bəṛi xusī hogī.*  
?If mother comes here, mother will be happy.
- (11a.) *əger mā yehā aengī to unko bəṛi xusī hogī.*  
If mother comes here, she will be happy.
- (11b.) \**əger ve yehā aengī to mā ko bəṛi xusī hogī.*  
If she comes here, mother will be happy.
- (12.) ?*əger rakes ko ḍigrī mil gēi to rakes vapəs cəla jaega.*  
?If Rakesh gets his degree, Rakesh will go back.
- (12a.) *əger rakes ko ḍigrī mil gēi to vəh vapəs cəla jaega.*  
If Rakesh gets his degree, he will go back.
- (12b.) \**əger usko ḍigrī mil gei to rakes vapəs cəla jaega.*  
If he gets his degree, Rakesh will go back.
- (12c.) *əger ḍigrī mil gēi to rakes vapəs cəla jaega.*  
\*If gets his degree, Rakesh will go back.
- (12d.) \**əger rakes ko ḍigrī mil gēi to vapəs cəla jaega.*  
\*If Rakesh gets his degree, will go back.
- (13.) ?*əger rakes cahe to rakes ja səkta hē.*  
?If Rakesh wishes, Rakesh can go.
- (13a.) *əger rakes cahe to vəh ja səkta hē.*  
If Rakesh wishes, he can go.
- (13b.) \**əger vəh cahe to rakes ja səkta hē.*  
If he wishes, Rakesh can go.
- (13c.) *əger rakes cahe to ja səkta hē.*  
\*If Rakesh wishes, can go.
- (13d.) *əger cahe to rakes ja səkta hē.*  
\*If wishes, Rakesh can go.

Note that in conditional sentences, too, backward pronominalization results in ungrammatical sentences (all the b sentences above are ungrammatical). Both forward and backward Equi-NP, however, result in grammatical sentences (Subbarao 1973). I will not discuss Equi-NP in detail here.



2.2 On the basis of the evidence presented so far, we may informally write a rule of pronominalization in a grammar of Hindi-Urdu in the following manner:<sup>10</sup>

(14.) Pronominalization:

$$\begin{array}{ccccccc} X & - & NP_i & - & Y & - & NP_j & - & Z \\ 1 & & 2 & & 3 & & 4 & & 5 \\ & & 1, & 2, & 3, & & 4_{[+Pro]}, & 5 \end{array}$$

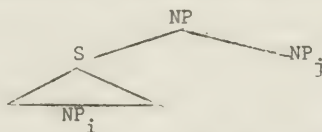
Conditions: (i)  $NP_i = NP_j$

(ii)  $NP_i$  precedes  $NP_j$

It will have to be specified that the rule is obligatory if in coordinate sentences,  $NP_i$  and  $NP_j$  are not strictly identical (sentences in (4) illustrate this), if  $NP_j$  is the head of a possessive phrase (as in (5)), etc. I will not attempt to list all the environments in which pronominalization is obligatory at this point. Notice that though elaborate, the conditions under which either pronominalization or Equi-NP or both may operate are not difficult to specify.

3.0 I shall now take up the discussion of relative clause construction in Hindi-Urdu and attempt to determine if the rule of pronominalization is involved in relativization.<sup>11</sup> In Kachru (1966), Verma (1966) and Masica (1972), relative clause construction in Hindi is described as essentially involving the following steps. The relative clause formation rule applies to an underlying representation such as the following:

(15.)



Condition:  $NP_i = NP_j$

The Relative Clause Formation rule may be formulated as follows:

(16.) Relative Clause Formation:

$$\begin{array}{ccccccccccc} A & - & NP & [ & S & [ & X & - & NP_i & - & Y ]_S & NP_j ]_{NP} & - & B \\ 1 & & & & 2 & & 3 & & 4 & & 5 & & 6 \end{array}$$

1, 2, J+3, 4, U+5, 6

where: A, X, Y and Z are variables, and  $NP_i = NP_j$





That is, the rule adjoins the relative marker J to the coreferential NP in the embedded S and the correlative marker U to the head NP in the main S. Since the relative clause may end up in three different positions in the surface structure, and normally the second occurrence of the repeated NP is deleted, an identical NP deletion rule of approximately the following form was assumed:<sup>12</sup>

(17.) Identical NP-Deletion (for Relative Clause);

SD1: X - J+NP<sub>i</sub> - Y - U+NP<sub>j</sub> - Z

SD2: X - U+NP<sub>j</sub> - Y - J+NP<sub>i</sub> - Z

1 2 3 4 5 6 7

1, 2, 3, 4, 5,  $\emptyset$ , 7

condition: 3 precedes 6.

The following relative clause sentences illustrate the data which was considered basic for rules such as (16) and (17) above:

(18.) ?jo kitab nehĩ bikĩ veh kitab behut mehəngĩ thĩ.

'which book' 'was not sold' 'that book' 'was very expensive'

(18a.) jo kitab nehĩ bikĩ veh behut mehəngĩ thĩ.

'which book' 'was not sold' 'that' 'was very expensive'.

(18b.) veh kitab nehĩ bikĩ jo behut mehəngĩ thĩ.

The book was not sold which was very expensive.

(18c.) veh kitab jo behut mehəngĩ thĩ nehĩ bikĩ.

The book which was very expensive was not sold.

(19.) ?ram jis mēkan mē rēhta hē us mēkan ke samne am ka ek per hē.

There is a mango tree in front of the house in which Ram lives

(19a.) ram jis mēkan mē rēhta hē us ke samne am ka ek per hē.

(19b.) us mēkan ke samne am ka ek per hē ram jismē rēhta hē.

(19c.) us mēkan ke samne ram jismē rēhta hē am ka ek per hē.

Recently, in Subbarao (1973), it has been suggested that instead of (17), a pronominalization rule applies following the Relative Clause Formation rule. Notice that given the data in (18-19), it could be argued that the rule that applies following (16) is (14) and not (17), i.e., following the formation of relative clause by attaching the appropriate markers to the relevant NPs, the repeated NP is pronominalized and later rules spell out J+NP<sub>[+Pro]</sub> as jo (or its inflected forms), or U+NP<sub>[+Pro]</sub>



as vəh (or its inflected forms). I will now present additional data and claim that such an account of the relative clause construction in Hindi-Urdu will result in a more expensive grammar of the language.

3.1 The additional data is provided by the following sentences:

- (20.) ?jo lərka kəl aya tha vəh lərka mere dost ka bhaī hē.  
'which' 'boy' 'came yesterday' 'that boy' 'is my friend's brother'.
- (20a.) jo kəl aya tha vəh lərka mere dost ka bhaī hē.  
'who came yesterday' 'that boy' 'is my friend's brother'.
- (21.) ?jin bəccō ko inam mile ve bəcce bəhūt xuš the.  
'which children' 'got prizes' 'those children' 'were happy'.
- (21a.) jinko inam mile ve bəcce bəhūt xuš the.  
'who' 'got prizes' 'those children' 'were very happy'.
- (22.) ?mīra jis mēkan mē rēhtī hē vəh mēkan bəhūt choṭa hē.  
The house in which Mira lives is very small.
- (22a.) mīra jismē rēhtī hē vəh mēkan bəhūt choṭa hē.  
'which Mira lives in' 'that house' 'is very small'.
- (23.) ?həmne jo pētr likhe ve pētr šayəd tumko nəhī mile.  
You probably did not get the letters which we wrote.
- (23a.) həmne jo likhe ve pētr šayəd tumko nəhī mile.  
'which we wrote' 'you probably did not get those letters'.

Notice that in (20-23), it is not the second occurrence of the repeated NP which has been reduced, rather, it is the NP in the lower sentence which has been reduced. The data could be interpreted in two ways. It could be claimed that the NP of the lower sentence has been reduced by backward pronominalization. The rule of backward pronominalization can be formulated in the following manner:

(24.) Backward Prenominalization:

$$\begin{array}{ccccccc}
 X & - & J & + & NP_i & - & Y & - & U & + & NP_j & - & Z \\
 1 & & 2 & & 3 & & 4 & & 5 & & 6 & & 7 \\
 1, 2, 3_{[+Pro]}, 4, 5, 6, 7
 \end{array}$$

Conditions: (i) 3 = 6

(ii) 6 commands 3 but 3 does not command 6

This rule would have to be specified as optional and as restricted in its



application to relative clauses only.

An alternate way of accounting for sentences (20-23a) is to claim that the NP in the lower sentence has been deleted following the application of the relative clause formation rule. Notice that Equi-NP in Hindi-Urdu operates both forwards and backwards (as seen in (12-13)) and hence, the relative clause construction does not have to be singled out for backward Equi-NP.<sup>13</sup>

The deletion hypothesis thus is more economical and intuitively more satisfying. The pronominalization hypothesis adds the rule of backward pronominalization and, what is more disturbing, makes the claim that backward pronominalization is a grammatical process that characterizes Hindi-Urdu. In the following sub-sections, more evidence will be presented to justify the deletion hypothesis as opposed to the pronominalization hypothesis.

3.2 In this connection, it is interesting to examine more data from Hindi-Urdu:

- (25.) mē ne jhuk kār fārs̄ se veh pīla pār gaya phūl uṭha liya.<sup>14</sup>  
I bent down and picked up the flower which had wilted from the floor.
- (26.) ...mere hath us murjahe phūl nahī, balki us sūkh gaye srot pār ṭik gaye hē...  
...my hands rested not on the wilted flower but on the stream which had dried up...
- (27.) ... kala pār gaya pītal ka pandan nēndī kī god mē dher diya.  
...put the pandan of brass which had turned black in Nandi's lap.
- (28.) ...ākhō se ṭāpek rahe āsū jhurriyō kī ghaṭiyō mē ṭekte uskī mēlī kurtī pār ṭāpek pāre.  
...tears running down from her eyes, halting briefly in the valleys of wrinkles, dropped down on her dirty shirt.
- (29.) lekin ṣayad cāl rēhī bat ko bādelne ke vicar se hī, usne...,  
esī koī halkī-phulkī bat kah ḍalī ho  
But, perhaps, he...made such a light remark in order to change the conversation which was going on.





- (30.) ...us hēsī ke sath hī uske ṭhek-ṭhek kər hil rəhe dāt cibuk  
 pər gir pērēge.  
 ...with that laughter, her teeth which were loose would fall  
 upon her chin.

Notice that in the underscored phrases above, not only the NP identical to the head NP, but also the relative marker and the tense along with its carrier have been deleted to reduce the relative clause. The phrases in (25-30) with full relative clauses will read as follows:

- (25.) jo phūl pīla pər gəya tha vəh phūl  
 (26.) jo srot sūkh gəya hē us srot pər  
 (27.) jo pandan kala pər gəya tha vəh pandan  
 (28.) jo āsū ākhō se ṭəpək rəhe the ve āsū  
 (29.) jo bat cəl rəhī thī us bat ko  
 (30.) jo (donō dāt) ṭhek-ṭhek kər hil rəhe the ve donō dāt

In (25-26), after the deletion of the coreferential NP, the relative marker, and the tense of the lower sentence, the order of the correlative marker vēh and the remaining parts of the lower sentence [pīla pər gəya and sūkh gəya respectively in (25) and (26a)] has been readjusted. In (27-30), the correlative marker is also deleted. It is reasonable to assume that after relative clause formation, if certain conditions are fulfilled, the relative clause may be reduced by deleting the relative-correlative markers and the tense of the lower S.<sup>15</sup> Notice that this rule is comparable to the whiz-deletion rule of English. Following this reduction, the reduced relative clause may be participialized, which will give the following phrases corresponding to (25-30):

- (25b.) vēh pīla pəra hua phūl  
 (26b.) us sūkhe hue srot  
 (27b.) kala pəra hua pītal ka pandan  
 (28b.) ākhō se ṭəpəkte hue āsū  
 (29b.) cəltī huī bat  
 (30b.) uske ṭhek-ṭhek kər hilde hue donō dāt

Now, the process of reducing relative clauses in Hindi-Urdu may be described as follows. The relative clause is formed by applying a rule such as (16) to an appropriate underlying representation, following



which Equi-NP deletes one of the two coreferential NPs. If forward Equi-NP applies, the result is a full relative clause. If, however, backward Equi-NP applies, there are further possibilities of reduction. The relative-correlative markers and the tense of the lower sentence may also be deleted by a rule of Relative Reduction. Subsequently, the reduced relative may be participialized.<sup>16</sup>

The claim made above may be strengthened by presenting evidence that in the derivation of reduced relative clauses, it is possible to delete not only the relative-correlative markers and the tense of the lower sentence, but that there is an intermediate step of deleting only the relative marker and that the deletion of the correlative marker is a further step in the same direction. Unfortunately, in Hindi-Urdu, there is no clear evidence of this process.<sup>17</sup> The Dakhini variety of Hindi-Urdu, however, presents clear evidence of such a process. Consider the following sentences from Dakhini:<sup>18</sup>

(31) yāā jyaadaatar jo logāā rahte wo rozgaar ke liye kapre dhote.

(31a.) yhāā rahte so lokāā kapre dho ko kamaatē.

The people who live here wash clothes for a living.

(32.) ammā khoe so rupiyaa ḍhūḍḍ rii e.

(32a.) gum gayaa so rupae ko ammā ḍhūḍḍte hai.

Mother is looking for the rupee which is lost.

A comparison of (31) and (31a) makes it clear that in Dakhini, it is possible to delete the relative marker independent of the correlative marker. The process of relative reduction in Dakhini may be described as follows. The relative clause is formed analogous to the way it is formed in Hindi-Urdu, following which either forward or backward Equi-NP applies. If forward Equi-NP applies, the result is a relative clause as in (31). If, however, backward Equi-NP applies, the relative marker may subsequently be deleted, and the result will be a reduced relative as in (31a). Tense-deletion seems to be an independent process in Dakhini. Consider the following:

(33) tum khāā jaate?

Where are you going?

(34) une kaaekuu jaate?

Why is he going?



- (35.) unō kis wakat jaate?  
When is he going?
- (36.) tum jaa raa.  
You are going.
- (37.) ham jaa ree.  
I am going.
- (38.) une jaa rii.  
She is going.
- (39.) ham/tum/unō jaa rē.  
We/you/they are going.

Notice that the tense carrier ho has consistently been deleted in (33-39).

3.3 To sum up the discussion so far, relative clause and reduced relative modifiers in Hindi-Urdu are derived by the following rules:

Relative Clause Formation

Equi-NP

J - U and Tense Deletion

Participialization

In Dakhini, the relevant rules are as follows:

Relative Clause Formation

Equi-NP

J-Deletion

Tense-Deletion

U-Deletion

Participialization

The relative order of J-Deletion and Tense-Deletion is not clear, but that does not affect the arguments of this paper.

4.0 The evidence from Hindi-Urdu and Dakhini, taken together, supports the claim that relative clause formation and participialization of reduced relative clause in Hindi-Urdu involve deletion rather than two separate processes of (a) pronominalization for relative clause and (b) deletion for participial modifier. Notice that in Dakhini, the evidence for progressive deletion is so transparent that there is no need even to entertain the pronominalization hypothesis. There are some interesting consequences to the acceptance of either the pronominalization or the deletion hypothesis for standard Hindi-Urdu.





If we accept the pronominalization hypothesis, the conclusions to be drawn are as follows: Hindi-Urdu is similar to English in that in both the languages, after relative clause formation, the coreferential NP is pronominalized. Also, both languages share the characteristics of backward pronominalization, although in Hindi-Urdu, this is restricted to relative clause constructions only. Hindi-Urdu is different from Dakhini in that Dakhini deletes the coreferential NP whereas in Hindi-Urdu, it is pronominalized.

If we accept the deletion hypothesis, the conclusions to be drawn are as follows. Hindi-Urdu and Dakhini are similar to Persian and other South Asian languages in that deletion is involved in relative clause formation in these languages. Hindi-Urdu and Dakhini are different from English in that the process of pronominalization is not involved in relative clause formation. Also, a process such as backward pronominalization is impossible in these languages.<sup>19</sup>

#### NOTES

<sup>1</sup>By 'coreference', I mean what Postal (1972) has designated 'stipulated' coreference.

<sup>2</sup>For a preliminary discussion of reflexivization in Hindi-Urdu, see Subbarao (1971), Kachru and Bhatia (1973) and Cohen (1973).

<sup>3</sup>Lakoff (1968 and 1969), McCawley (1970) and Postal (1969 and 1970) among others, raise this question.

<sup>4</sup>I will not discuss forms such as vesa and vala which occur in place of repeated modifiers or repeated head nouns respectively, e.g.,

(i) *rēma ne kuch mehēngī benarsī sarīyā mēgaī isliye sīla ne bhī vēsī sarīyā mēgaī.*

Rama ordered some expensive Benares sarees, therefore Sheela ordered similar sarees, too.

(ii) *vēhā do kutte bik rēhe the, surendr ne sēfed vala liya, rēhīm ne kala vala.*

There were two dogs being sold there, Surendra took the white one, Rahim the black one.

<sup>5</sup>See Subbarao (1973) for a discussion of Equi-NP in Hindi. The discussion is equally applicable to Urdu. In addition to the NP-complements, cases such as the following involving different types of participial



adverbials have been discussed in the above work:

- (i) ate hī pitajī ne ṭivī calai.  
As soon as he came in, father switched on the TV.
- (ii) khana kha kər hēm ghūmne cālēge.  
After we eat, we will go for a walk.
- (iii) ghas pər leṭe hue ləṛke dhūp sēk rəhe the.  
Lying on the grass, the boys were sun-bathing.

<sup>6</sup>In Stockwell, et. al. (1973), it has been claimed that pronominalization in English is independent of coreferentiality. If this account is accepted, then Hindi-Urdu differs significantly from English in this respect.

<sup>7</sup>The ? preceding Hindi-Urdu sentences throughout this paper indicates an intermediate representation, i.e., the ? sentences are not well-formed surface representations. Also, all \* sentences are ungrammatical in the intended sense only, they may or may not be so in other senses.

<sup>8</sup>vala (variant forms vale, valī) may not be considered equivalent to the English indefinite pronoun one. Nothing discussed in this paper, however, depends on the status of vala in Hindi-Urdu. The ek in these examples is the indefinite determiner ek and not the numeral 'one'. See Verma (1966) for a discussion of Hindi determiners.

<sup>9</sup>Curiously enough, the only part which can be replaced by a pro-form in this sentence is the modifier məhəngī, e.g.,

- (i) ejit ne isliye ek məhəngī kar xərīdī ki sumit ke pas vesi hī ek kar thī.

Ajit bought an expensive car because Sumit had a similar car. I will not discuss such cases in this paper.

<sup>10</sup>Again this does not mean that a claim is being made here that pronominalization is a transformational rule in Hindi-Urdu. To the extent that sentences such as (10) are ill-formed and sentences such as (10a) are well-formed, it is justifiable to talk in terms of a tentative rule of pronominalization in Hindi-Urdu.

<sup>11</sup>I will only discuss the restrictive relative clause involving definite head nouns in this paper. I will say nothing about the source from which such relative clauses originate. Donaldson (1971) discusses movement in restrictive relative clauses in Hindi and Donaldson (1973) discusses the conjoined source analysis for restrictive relative clauses in Hindi. These discussions are equally applicable to Urdu.

<sup>12</sup>Neither Kachru (1966) nor Verma (1966) give an explicit rule such as (17).

<sup>13</sup>Subbarao (1973) discusses several cases of backward Equi-NP. It seems that in order to ensure the proper application of backward Equi-NP, one will have to define 'subordinate clause in Hindi-Urdu' so that the



rule could be simply stated as:  $NP_i$  deletes  $NP_j$  provided both are coreferential and  $NP_j$  occurs in a subordinate clause.

<sup>14</sup> The sentences given here have been taken from written sources (Saptahik Hindustan of June 25, 1972 and Dharmyug of September 10, 1972). But, such phrases are equally appropriate in spoken Hindi-Urdu.

<sup>15</sup> These conditions have been discussed in detail in Kachru (1965, 1966 and 1973).

<sup>16</sup> This contradicts the claim made in Subbarao (1973) that relative clause formation involves nominalization whereas deletion of the coreferential NP from the lower S obligatorily requires participialization. Notice that if this were the case, sentences (25-30) should have been impossible. The data in (25-30), together with the earlier data considered in this paper, suggests a derivation such as:

Relative Clause Formation:	jo āsū beh rōhe the ve āsū
	wh- tears were running the tears
Equi-NP:	jo beh rōhe the ve āsū
	The tears which were running
Relative Reduction:	beh rōhe āsū
	running tears
Participialization:	behte hue āsū
	running tears

<sup>17</sup> The underscored phrases in (25) and (26) could be analyzed in two different ways. It could be claimed that the Relative Reduction rule has only deleted the relative-marker and tense of the lower S and subsequently, the order of the correlative-marker and the remainder of the lower S has been adjusted. Or, it could be argued that the Relative Reduction rule has deleted the relative-correlative-markers and the tense of the lower S, and the items veh and us in the above sentences are exponents of the remote demonstrative determiner of the head NP. Since the correlative-marker, the remote demonstrative and the third singular pronoun in Hindi-Urdu are homophonous, it is difficult to determine in a given case which category is represented by the surface form veh (or its inflected forms).

<sup>18</sup> The correlative-marker so in (31a-32a) is not an exclusively Dakhini form. It is an older form and is still common in some contexts in standard Hindi-Urdu, e.g.,

- (i) jo caho so kero.  
Do whatever you wish
- (ii) jo sota hē so khota hē.  
He who sleeps loses.

Also, several dialects of the Hindi area and several modern Indo-Aryan languages have correlative forms such as so, se, ṣe, etc. The Dakhini sentences given in this paper have been taken from Schmidt (1969) and follow her transcription. (31) and (31a) as well as (32) and (32a) represent the sentences produced by two different speakers of Dakhini.





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PREFIXING, VOICING AND SYLLABLE REDUCTION IN BURMESE:  
JUNCTURE AND SYLLABLE STRUCTURE

F.K. Lehman

1. INTRODUCTION<sup>1</sup>.

In a previous paper (Lehman 1971), I dealt with the noun-forming prefix, a- in Tibeto-Burman, Wolfenden's so-called non-pronominal a-. What I said there concerned the syntax and morphology of several T-B languages including Burmese. I thought it proper at that time to refrain from considering one of its most striking properties in Burmese, the fact that it is always "toneless." Tonelessness is not limited to this or to any set of formatives, and so far as I am aware nobody has been able to propose a truly systematic phonological description of it. Informal ones of varying degrees of cogency have been offered (e.g., Okell 1969), but always as more or less rule of thumb propositions of an essentially idiosyncratic phenomenon opaque to anything approaching a general treatment.

Meanwhile, I have also put forward (Lehman in press) a general theory of T-B tone that treats tone as a form of syllabic accent for monosyllabic languages, and that attempts to give a precise meaning to the latter expression by arguing that a monosyllabic language is one in which, at some level of phonological derivation, word, or at least formative boundaries are conventionally inserted between every adjacent pair of syllables in a surface structure word.

In the present paper I wish to offer a description of atonality and attendant vowel reduction in Burmese, both for the a- prefix and for other cases. I shall do this by showing that atonality is properly understood as pitch-accent reduction, a phenomenon belonging in all essentials to the same class as stress-reduction in other languages. This represents a proper extension of my earlier theoretical paper on tone and syllable structure to at least a part of the subject matter of my paper on the a- prefix. The analysis offered here will not handle all the cases of atonality in Burmese, but I believe it comes a good deal nearer doing so than has any previous proposal, and since Burmese atonality





is well-known as a fact relatively refractory to clear treatment, I believe my proposals are justifiable. To the extent they are successful, they are an attractive way of accounting for loss of tone in non-final syllables as an instance of the widespread and relatively well-studied phenomenon of accent reduction under the condition of successive removal of internal word boundaries (Chomsky and Halle 1968).

I shall also use this occasion to make a revision in my earlier theoretical paper. I claimed there to have shown the necessity for adding to the array of substantive universals in phonological theory the concept of the syllable boundary, but I shall argue here that that part of my proposal was incorrect.

## 2. DATA AND ANALYSIS.

2.1. Let us look at the basic facts connected with atonic syllables in Burmese. In the first place, we are dealing with words of two or more syllables; vowel and accent **reduction** never apply to a word-final syllable and so never to a syllable in isolation or a word only one syllable long. A syllable that is always a prefix and that meets segmental phonological conditions, if there are any, for reduction will, of course, always appear in this shape, and the a- nominalizer is a leading example of this. But not all reduced syllables are prefixes in the sense of being wholly bound derivational or inflectional forms, and they may appear reduced in some but not all contexts. Moreover, aside from the fact that noun-postpositions never undergo reduction, there is no obvious way of relating reduction to superficial distinctions between suffixing and prefixing, since for example finite verbal endings typically do undergo reduction when such elements as sentence-final interrogative particles follow them, e.g., thwa:de, goes, but thwa:bala:, does he go? with e standing as the reduced vowel.

Reduction is closely connected with the facts of assimilative voicing in polysyllables, and in fact it is convenient to look first at the latter process.

2.2. Consider the following examples:

(a) kaun:, good      kaun:gaun:, well (manner adverb formed by<sub>2</sub>  
reduplication)

(b) wuN, office, responsibility; htau?, prop, support  
wundau?, an administrator of second rank



(c) hsi-pó, the Shan name of a Shan state

thi-bo:, the Burmese rendering of the name

but

(d) mei<sup>2</sup>hswei, friend.

(a) through (c) exhibit regressive assimilative voicing, (d) does not. If the preceding syllable ends in a voiced segment--which, in Burmese, means it is a sonorant--the initial of the next syllable is voiced whether originally aspirated or plain. Moreover, the process is independent of whether or not the syllables are independent morphemes, so there is good reason to think of it as a process of word-level phonology. In (a) through (d) there is no instance of reduction, but in the following there is.

(e) ti<sup>2</sup>, one; hku., the classifier for generalized inanimate objects  
təhku. one (thing)

(f) ku.la, Indian, foreigner (from the Indic, kula, family or caste)  
[kəla] + htaɪŋ, sit, seat  
kələhtaɪŋ, chair

(g) hkaN, to take in, receive; twiN:, inside  
hkədwiN, the oral cavity.

Here it is reasonable to suppose that reduplication indicates a closer juncture between successive elements than in the former set of examples, but contrary, perhaps, to expectation based on intuitions of phonological naturalness, there are narrower constraints on assimilative voicing across the closer juncture than across the more open. In the second set of examples a following unaspirated stop voices but not an aspirated one. In both classes of cases aspirated sibilants do or do not voice with the same conditions as aspirated stops<sup>3</sup>.

(h) htəmiN:, boiled rice, a meal; hsaiŋ, shop  
htəmiN:zaiŋ, restaurant  
kəla, Indian; hsiN, appearance  
kələhsin, Indian-looking.

Obvious prefixes, however, almost never cause voicing on a following initial whether aspirated or not in dialects where close juncture generally constrains voicing.

(i) məkaʊŋ:, not good

(j) ʔəkaʊŋ:, a good one, something good.



It is possible, on the one hand, to assume that, since these prefixes never take any form other than this, they appear in the dictionary with the vowel ə; for irrespective of whether we wish to allow for absolute neutralization in phonological theory or not (cf. Kiparsky 1968; Brame 1968; Lightner 1971), the language provides no evidence for assigning this vowel any other form.<sup>4</sup> On the other hand, the phonetic similarity of ə to a taken together with the fact that phonological theory makes the latter the "least marked" or most universal vowel (Chomsky and Halle 1968; Jakobson and Halle 1956: 138-144) leads me to believe that these prefixes are underlyingly or lexically represented with the vowel a, that in Burmese vowel reduction amounts to making every vowel to which it applies "least marked," and that it is no accident that the Burmese orthography has never needed to develop any way of transcribing the distinction between a and ə. In fact whenever one wishes to write a form as explicitly reduced when in full form it has some vowel other than a one writes just the initial of the syllable with its inherent vowel, a, and the only ambiguity is that a syllable so written is pronounced in unreduced form on the short, or creaky tone, while as a reduced form it is on mid pitch and short. E.g., "one (thing)" can be written as either ti<sup>2</sup>hku. or ta(.)hku.--subjoined dot being the sign of the short tone, that is, တီ ခု or တု, where ခ represents final ə following vowel i, and တ represents, ordinarily, the consonant t followed by the vowel a on the same short tone. The same facts hold for writing the number two, hni<sup>2</sup>, in reduced form, hnə.

Suppose, now, following Lehman (in press), that in general in Burmese morpheme or word boundaries are inserted by convention between successive syllables in a surface word<sup>5</sup> and that voicing occurs across these boundaries constrained not to apply to aspirated consonants. As a matter of fact it is necessary to suppose that the inserted boundary is a # rather than merely a +, since phonological theory predicts that the domain of a rule assigning accent is a word and syllable is the domain of application of such a rule in tonal languages. So, at the point in a phonological derivation where tone assignment takes place each syllable is itself surrounded by # boundaries.





We are now in a position to attempt a first approximation to some phonological rules characterizing assimilative voicing and vowel-accent reduction. It appears that the processes are closely interrelated, and that the conditions for the latter are somewhat dependent on those for the former. Roughly, close juncture is required for reduction, close juncture constrains against voicing, and in the case of prefixes, where a reduced vowel is at least close to the underlying form, voicing of the following initial is not permitted. We can therefore take as a working hypothesis that, in a sense to be defined below, close juncture between syllables is itself a more or less underlying relation between a prefix and the stem that follows it. A juncture must have been (cf. Lakoff 1970a; 1971 on global derivational constraints) relatively open at a prior stage of derivation if voicing is to apply at all. Since, moreover, in a verb, the main root and auxiliaries never meet the condition for syllable reduction, while always meeting the condition for voicing,

- (n) thu, he; thwa:, go; hke., aspect marker; me, future ending  
thu thwa:ge.me, he will go hence.

we assume that such strings are characterized by open junctures at the point where word boundaries might otherwise be lowered in status. We thus propose, presupposing the much earlier rule of # insertion, what are essentially formalizations of Okell's (1969 I:12-17) generalizations

- (1) # → + /<sub>K</sub>[ XCV(Glide)(N) \_\_\_\_ CVY]<sup>K</sup>, but not after verb roots and auxiliaries, or after postpositions,

where K is a major category word as defined above, and X, Y are variables.

That is, word-internal word boundary is lowered to morpheme boundary after a voiced final.

Actually, in the light of present understanding it would be almost as plausible to have # in this rule go to Ø. However, this would require that we adopt another global condition on rules, namely, in the case of the later voicing rules, that if successive syllables in a word are not separated by a boundary, and if they have not been so earlier in the derivation at the point where insertion applied, assimilative voicing must not be allowed to apply at all. This arises in case we



eliminate syllable boundaries from the theory, and because this form of the rule would do away with (+) morpheme boundaries in Burmese phonology. Since I cannot at present think of an independent need for + in this language, my only reason for writing (1) as I have done, aside from the relative notational convenience as against assuming the global condition, is that I shall have to account for the restricted voicing (of non-aspirates only) across close juncture where # has been deleted and the absence of voicing across close juncture otherwise. Since the theory contains + anyhow, it is at least possible that we have to distinguish two degrees of open juncture, + and  $\emptyset$ , where  $\emptyset$  is simply syllable adjacency. Pending critical evidence, I adopt this usage provisionally.

In either case it is obviously necessary to suppose that, however prefixes are introduced, whether as lexical items or by a syntactic transformation, # insertion never applies immediately to their right, and that at the point where it has otherwise applied prefixes have no # after them and no +, since no evidence for it exists. Under such circumstance, the pitch and contour assignment rules fail to apply to prefix syllables. They are given least-marked (mid) pitch by universal convention, but no accentual prominence.<sup>6</sup>

Now consider the cases where voicing occurs freely. This can be described as

$$(2a) C \rightarrow [+ \text{voice}] / {}_K[X [+ \text{voice}] \# \_\_\_\_\_\_ Y]^K.$$

Where rule (1) has applied, however, we get

$$(2b) C \rightarrow [+ \text{voice}] / \_\_\_\_\_\_ K[X [+ \text{voice}] + [\text{unaspirated}] Y]^K.$$

These are disjunctively ordered to apply after (1), and are obviously collapsible as

$$(2') C \rightarrow [+ \text{voice}] / {}_K[X [+ \text{voice}] \left\{ \begin{array}{l} \# \text{---unaspirated} \\ + \text{---} \end{array} \right\} Y]^K.^7$$

We can now consider reduction.

$$(3) VX \rightarrow \underline{a} \emptyset / {}_K[ \dots C \_\_\_\_\_\_ (+) \dots ]^K \quad \left( \begin{array}{l} \text{this rule must also cause a} \\ \text{w to be dropped if it is the} \\ \text{second segment of an initial} \\ \text{cluster in the syllable:} \\ \text{nwa:nou.} \rightarrow \text{nənou., milk).} \end{array} \right.$$



Note that, at least on the assumption of extrinsic rule ordering, this rule accounts both for the fact that reduced syllables are atonal and for the fact that these syllables lack distinctive tone. For, the tone-assignment rules are clearly earlier than (1). Thus, no tone rules will apply to the output of (3). Also, if we consider V, in (3), as the canonical 2-segment vocalic nucleus of all but inherent prefix syllables in Burmese, then the a in (3) is necessarily short, phonetically ʌ or ə. This distinguishes it from accented (tonal) syllables on the mid tone even though both have mid pitch.

However, if we look at a few further examples, we shall see a need for some revisions in the scheme of rules proposed above. On first glance, these examples will appear to constitute evidence for arguing that the phenomena we are discussing are at present highly refractory to principled analysis, that is, unsystematic in the light of available suggested generalizations. Something like this conclusion is implied by Okell (1969 I:12-17) on very similar considerations, after he has proposed what he can treat only as rules of thumb for voicing and reduction that are very similar to the rules given above. Indeed, the only one of the general tendencies he adduces that is not hedged about with exceptions of apparently quite idiosyncratic nature is that mə- and ?ə never induce voicing.

(o) youʔhka, (Pali rukha, tree); sou:, to preside over  
youʔhkəzou:, a tree sprite or demon

(p) hnouʔ, mouth-aperture; hkaN:, a functionally proper appendage  
hnəhkaN:, lip(s).

(o)--youʔ--(1) cannot delete # following it and (2') doesn't apply at all, since it ends in a (non-voiced) glottal stop (or -k, in other dialects of standard Burmese). Likewise, (3) can never apply to hka, but (1) applies to the juncture following it, (2') then voices the initial of sou:, and the word is normal with respect to the rules proposed. But (p)--constitutes a counter-example. The first syllable loses its glottal final and gets reduced, so (1) applies despite the underlying stop final. It is tempting to speculate that a minor rule<sup>8</sup> of final stop deletion

(4) C → Ø / V \_\_\_\_ #





accounts for (p), since there is independent evidence for such a rule in examples like

- (q) hou<sup>2</sup>, to be so, such; ke<sup>1</sup>, asseverative non-future finite verbal ending hou<sup>2</sup>ke. or  
hou ge<sup>1</sup>, right<sup>1</sup>!, where the acute accent mark indicates that the high tone of a stopped syllable and the attendant lengthening and tensing of the initial remains.

Here we need to postulate (4) applying either before or after (1).

(2') voices the next initial, but (3) cannot apply since (1) has not done so to delete #, because this is a verb-and-auxiliary construction. In this case (4) is optional.

Then (p) is accounted for, since this is not a verb and, if we let (4) apply before (1), # will be lowered, (2') will then fail to voice the following aspirated initial, and (3) will reduce the first syllable.

- (r) hpaN, glass; hkwe<sup>2</sup>, a cup or vessel  
hpaNgwe<sup>2</sup>, a glass tumbler  
hkaun<sup>1</sup>, head; hsaun, to bear or carry  
gaun<sup>1</sup>zaun, to take the lead, leader  
gaun<sup>1</sup> bu. (from hkaun<sup>1</sup>hpu<sup>1</sup>), a thing on the head for resting a burden.

Why the aspirated second initial voiced? A very large class of such examples<sup>9</sup> suggests that ordinarily even a final nasal may block (1) from applying. We therefore replace (1) by

- (1') # → + / <sub>K</sub> [XCV (Glide) \_\_\_\_\_ CVY]<sup>K</sup>, the other conditions of (1) standing unaltered.

This emendation of (1) has the merit of being more general in constraining against application after nasal finals in the same way as after final stops. Furthermore, it allows us to propose a fairly straight forward solution to a large number of additional cases, and to account naturally for the special problem posed by nasalized syllables. Take such words as the following:

- (s) taN -hka: → dega, door<sup>10</sup>  
nya<sup>11</sup> thaN: hkaun → nya.thegaun, midnight  
taN-hkou: → degou<sup>11</sup>



The problem is to account for the juxtaposition in these cases of reduction and the voicing of a following initial. Assume (1'). Then these are all exceptions to it, because # is lowered after a nasal final, providing the condition for reduction. Why then the exceptional voicing, which goes through as if the # had not been lowered? I submit that all such cases work according to the following convention:

(2') applies as to instances with unlowered # whenever # has been lowered exceptionally by (1').

This is a perfect instance of what Lakoff (1970b) calls a trans-derivational constraint, a constraint that forces us to consider an exceptional derivation together with one that would have come about without the exception to conditions on one of the rules involved.

Why is it that this class of exceptions seems almost wholly confined to nasal syllables? As Maran (1971) and I (Lehman in press) have argued, different varieties of modern standard Burmese require different treatment of these syllables. In some cases it is clear that although they are realized phonetically with nasalized vowels, we have direct evidence for postulating for them underlying segmental nasal consonants as finals, specifically ŋ after diphthongs (tensed vocalic nuclei), and n elsewhere. In others, notably Rangoon colloquial, it is perhaps correct to say, with Maran, that these are just vowels with an underlying feature of nasality. Where there are nasal finals, they block application of (1') to nasal syllables. But to the extent that these syllables are characterized by merely having nasalized vowels (1') applies to them. It is therefore predictable that any uncertainty (in the sense of Lightner 1971) in the underlying representation will lead to inconsistencies in the way the rules affect such syllables. This is just what we have here, and it suggests that we are in the presence of a gradual shift in lexical representation for these syllables in both Upper and Lower Burmese. While in general Upper Burma dialects tend to preserve nasal finals they also (Okell 1969 I:18-19) tend to have fewer exceptions to (1'), hence greater frequency of reduction (3). And this is so even for nasal syllables, so that there are words which Upper Burmese seems to treat as going through (1') that Lower Burmese does not.



(t) htaN:, palm; yei, liquid

htəyei, in Upper Burma / htan:yei, in Lower Burma, palm toddy.

### 3. CONCLUSION.

What I have shown in this paper is simply that a proper extension of the theory relating tone to syllable structure allows us to make a great deal more sense out of the welter of variations on facts concerning voicing and reduction than has hitherto been possible. I cannot in the least claim to have treated the problem exhaustively, let alone to have taken care of all the attendant anomalies. I have, I think, reduced these anomalies to a manageable pattern, however, and it is in addition a reasonable task of linguistics simply to take on the whole well recorded observations and largely correct generalizations made by others (in this case proposed by Okell) and to refine them by showing how they follow from, and are interrelated with more comprehensive facts and relations in the grammar, and how general theory bears upon their description. This alone can raise grammars to the level of at least descriptive adequacy (Chomsky 1957). It is this task that I set myself here and that I believe I have to some extent fulfilled.

### 4. APPENDIX: On the Questionable Status of Syllable Boundaries in Phonological Theory

In an earlier paper (Lehman 1973) I proposed an argument purportedly demonstrating the necessity for incorporating in phonological theory an explicit notion of a syllable boundary. The argument was based upon the idea that certain rules, in particular the rules that assign tone on the basis of post-vocalic non-sonorants, must always be able to know whether such a segment is to be accounted in the same syllable as the vowel whose tone is to be determined or as the initial of a following syllable. More especially, such rules were in turn shown to be dependent upon other rules that assign word boundary, #, between successive syllables in a surface syntactic word. It is the latter **rules**, in fact, that must know where to insert #.

Obviously, the syllable structure rules of Burmese will ensure that many cases are unproblematical. For instance, if two vowels are separated





by just one non-vowel, then the first is on mid tone, because its syllable contains no final such that the tone-assignment rule of Burmese applies, viz.,

(5) V [+ high] / \_\_\_\_  $\begin{bmatrix} +\text{segment} \\ -\text{sonorant} \end{bmatrix}$  #.

Every Burmese syllable has to begin with at least one glide, nasal, stop, liquid, sibilant or laryngeal, and the mid tone, or unmarked pitch, is by universal convention assigned any vowel not subject to (5). In fact, there is probably yet another universal involved (cf. Hooper 1972:534): within a word, if two syllables be separated by only one non-syllabic segment, it is to be accounted the initial of the second syllable. Hooper uses this to argue in favor of an explicit syllable boundary, but I shall dispute the point here.

Anyhow, there are bound to be a certain number of apparently unclear cases, such as a string of the form [CVNwVX], where w is the back, rounded glide. Since Burmese allows initial clusters such as ŋw- and nw-, and since in some standard dialects there are syllabic final nasals -ŋ and -n, we might ask whether in the given string, N is part of an initial cluster or the final of the first syllable. I argued previously that this necessitated an arbitrary syllable boundary, which Burmese structure rules could, in such cases, insert before N or between N and w but this is at least not obviously so.

We know that perceptually and instrumentally a final consonant is in general distinguishable from a non-final one in isolated syllables even when the two consonants are otherwise phonemically "the same." I am under the impression that we know very little about the features necessarily involved in this distinction, but in Burmese, finals are unreleased; in English the difference in the case of unvoiced stops is heard as that between aspirated initials and unaspirated finals. More generally, the English distinction may have to do with a tense/lax distinction. It now seems to me that morpheme structure rules or markedness rules are inherently capable of putting these feature distinctions on consonants at the level of underlying phonological representations. If this is so, the need for syllable boundary vanishes.

For Burmese let us assume the feature [α released] to be the



critical one. Then for the clear cases like [CVCVX], a morpheme structure rule would obligatorily make 3 [+ released], in effect determining that it is an initial. In an ambiguous case, [CVNwVX], such a rule has the option of making 3 [+ released] or [- released].<sup>123456</sup> Phonological marking conventions (Chomsky and Halle 1968) would do the same thing, but in the first example underlying representation of 3 as [α released] would be subject to a convention interpreting [α] as necessarily [+], while in the second example 3 would be underlyingly either [u released] or [m released], that is, unmarked or marked respectively for this feature. Then according to Hooper's proposed universal, [u released] would be interpreted as, say, [+ released], [m released] as [- released], so that in the "normal" instance an open first syllable and a second syllable beginning with N would be produced, whereas the less natural result would be a first syllable with a nasal final. This is consistent with even more general markedness theory (cf. Lehman in press, citing Lightner and Jakobson), according to which open syllables are less "marked" than closed ones.

Then the Burmese rule inserting # between successive syllables would know where to do so uniquely in every case by referring to the feature of releasedness on non-vocalic segments. The question remaining for phonological theory is, then, whether such features as releasedness or tenseness on non-vowels in this connection is merely phonetic, a matter of degree only, or phonological, capable of being motivated at the level of phonological structure rules. It seems to me that the second alternative is the better, but the matter is not at present completely decidable. There is in any event no difficulty in having the phonetic rules interpret these categorical features in any scalar way that is wanted.

Where I have elsewhere claimed that every vocalic nucleus in these languages is underlyingly two segments long, short vowels being [+ syllabic] [- syllabic], long ones [+ syllabic] [+ syllabic], and where we must account for their being perceived as in each case constituting only one syllable, we still need no syllable boundary, since no syllable can begin with a vowel, and so only the next following segment, necessarily a non-vowel, can be an initial and be given the appropriate releasedness marking.



This solution is peculiarly attractive for a language like English. It allows us to deal naturally with the fact that, in a string like VCV, the syllable division is perceived as falling right in the middle of C, a fact incapable of being captured by a theory with syllable boundary, by definition [- segment]. Hooper (1972: 536 ff.) proposes a readjustment rule for syllable boundary placement: in effect if VCV is a word composed of formatives V and CV, it will, after the stressing of the final syllable, have § moved from between 1 and 2, where it had been put by the universal convention, to between 2 and 3, assuming that stressed or tensed syllables attract a maximum number of consonants to themselves (Hoard 1971). But this fails to account for the perceived phonetic ambiguity of the syllable division.

However, it is natural to have the adjustment rule change the aspiration or tenseness or releasedness feature that underlyingly marks 2 as an initial. Then either the phonetic rules interpret 2 as having a degree of this feature, whatever it turns out to be, determined by the fact that it has been subject to this readjustment rule, and then the perceptual "boundary" is a direct function of the scalar degree of this feature on C itself; or else the perception of syllable division as falling ambiguously is founded upon the perceived conflict between the universal, "natural" treatment of C as an initial and the relative anomaly of its interpretation by the adjustment rule as a final.

#### FOOTNOTES

<sup>1</sup>I acknowledge with pleasure the assistance of A. Simon Suwantra in this work. The initial version of the rules for voicing and vowel reduction were worked out together with him. His work with me was supported by a grant from the Research Board of the Graduate College of the University of Illinois, for which I am especially grateful. I also thank Miss Aporn Surintramont for valuable discussion of related problems in Thai.

<sup>2</sup>For a partial treatment of reduplication connected with the a- prefix, see Lehman 1971.

<sup>3</sup>See Lehman (in press) for the marginal question whether the final -s (Old Burmese -c) on some instances of the writing of the a- prefix is to be taken seriously. The reduced form of the number two, hna constitutes an apparent exception (Okell 1969, I:16). It appears never to induce





voicing. Okell gives, as an example, hni<sup>2</sup>, two; kaun, the classifier for animals; hnēkaun, two (animals). While this is common enough in Lower Burma, my experience is that hnēgaun and the like are almost equally so, more so in Upper Burma. The well-known brand of matches in Rangoon was to the best of my knowledge hsiN: (elephant) (h)nēgaun, "two elephants" brand, never \*hsiN (h)nekaun. Okell's name for reduction is "weakening."

<sup>4</sup>Aspirated nasals and liquids never voice (Okell 1969, I:13), but as he later observes (page 17) th, the dental sibilant, voices in some cases, but in others can freely either voice or not, especially after a reduced syllable. It is therefore likely, and historical evidence supports this conjecture, that this sound is ambiguous in respect of aspiration.

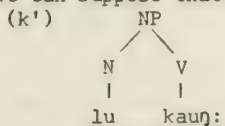
<sup>5</sup>Since a surface syntactic word cannot under the present set of assumptions be defined as a string surrounded by, but not including, #--those are the mark of a purely phonological word--we have to define the former in terms of bracketed syntactic structure. We assume it to be a constituent dominated directly by a major category (say NP or VP) in the sense of Chomsky (1965) that is not itself immediately dominated by the same major category, i.e., does not itself meet the A-over-A condition. This allows us to account for the fact that a head noun voices the initial of a following modifier (e.g., verb or adjective root)

- (k) lu, person; kaun:, good  
lu-gaun:, a good fellow

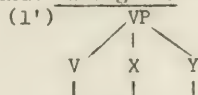
and the fact that in a series of main and auxiliary verb roots and endings each syllable ending in a voiced segment voices the following initial

- (l) thwa:, go; hke., the sign of the double perfective aspect; te, non-future finite verbal ending.

thwa:ge.de, went hence, while a determiner (demonstrative) does not voice a following noun. That is, we can suppose that lu-gaun: has the constituent structure



and that thwa:ge.de is



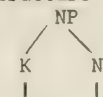
, where x, y are whatever parts of speech auxiliaries, modals and tense-aspect belong to, a problem beyond the scope of this paper,

while

- (m) di, this; hke:tan, pencil  
di hke:dan, this pencil



has the structure  
(m')



where K is some major category, in which case the initial of "pen" is predictably not voiced. The motivation for the subtrees is scattered throughout the literature, e.g. Chomsky (1965).

<sup>6</sup>In fact this can be taken to mean (for details, Lehman in press) that, uniquely, prefixes have vocalic nuclei only one segment long. I must add that it is entirely possible that all or most word-internal # boundaries are deleted by relatively late phonological rules. I shall not consider the matter in this paper. Finally, it is not necessary to take account in these rules of the h and ? (lowered glottal stop) postulated in Maran (1971) as underlying the heavy and short tones, respectively, because the earlier tone assignment rules will have erased all medial postvocalic laryngeals.

<sup>7</sup>The fact that this is to be stated as one rule is not uninteresting in the light of recent arguments (Koutsoudas 1972; Lehman 1972) about whether extrinsic rule ordering is necessary in grammars. For instead of having to mark (1) as applying before (2a) or (2b), we can perhaps (cf. Lehman 1972:545) consider this to be a case of intrinsic ordering, because there is no way for (2') to apply unless (1) has applied.

I am, however, not wholly convinced by this argument. Unless there is some obvious way of marking all derivations improper just in case part of a rule could never have applied to any derivation, it is perfectly possible to consider the part of (2') equivalent to (2b) to be simply vacuous in all cases where (1) applies after (2'). This leaves (2') intact, since the reverse order is equally possible, and then both parts of (2') have some non-null domain of application. Clearly, in the order (2'), (1), we would get some unacceptable derivations, e.g.,

ku.#la#htain  $\xrightarrow{(2')}$  ku.#la#daɪn  $\xrightarrow{(1)}$  ku.la-daɪn reduction \*kelədaɪn.

The only obvious way to block this is to mark, again using a global constraint, a derivation unacceptable if it contains a voiced initial that was previously unvoiced and aspirated and could have, to begin with, met the structural description of (1). But this is certainly nothing but extrinsic ordering reintroduced through the back door.

I conclude that either (1) and (2') are extrinsically ordered, and therefore extrinsic ordering exists in grammar, or there is a universal convention to the effect that an order in which even part of a rule would never have a non-null domain of application is always blocked. I do not know what evidence might decide such an issue.

<sup>8</sup>See Lakoff (1970c), a rule that applies only to a marked subset of exceptional lexical items, or that applies to such a marked subset under conditions of structural description in the rule different from its usual structural description. The condition for this rule is likely to be sociolinguistic and stylistic in part; the frequency of application



of the rule is greatest in frozen expletives and "throw-away" expressions of the kind illustrated in (q).

<sup>9</sup>Such cases as Old or Written Burmese taN hsaun mouŋ / Modern Burmese tezaun-mouŋ look superficially as though they belong here, but they do not. Such things as names of months constitute a difficult set of genuine exceptions. to-dheliN fails inexplicably to reduce the first syllable, yet the second initial is voiced, suggesting that (1') has applied. təbou.dwe voices the second and third initials yet fails to reduce the second syllable, and so on. I do not know why nya., night, fails to undergo the effect of (1'). It is possible however to suggest that many lexical items, even whole semantic classes of them, are marked for (1') not to apply after them. For instance, nouns referring to human persons and statuses in general fail to let (1') apply after them! lu-gaun:, a good fellow; mi.gin (from mi., mother, and hkiN, dear), mother, etc., even though the third personal pronoun undergoes (1') and therefore reduction generally: thu, he, she, one; ci:, great; thəji:, headman; hkou:, to steal; thəhkou:, thief, and so forth. Almost certainly other apparent non-exceptions to the rules regarding voicing and reduction are really exceptions, not in respect of voicing but to (1'), e.g., mi.hcaun: → mi.jaun, crocodile, monitor. We know so little about the details of the Burmese lexicon that nothing useful can be accomplished by pursuing the matter here.

<sup>10</sup>For the phenomenon that voices a word-initial consonant on condition that the initial of a subsequent syllable in the word has undergone assimilative voicing, see Okell (1969 I:16-17) on "extended voicing."

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# RESTRUCTURING IN THE VERBAL SYSTEM OF PALI<sup>1</sup>

Margie O'Bryan

0.1 Examination of the verbal system of Pali reveals only one obvious difference between the shape of verbal roots in Sanskrit and in Pali (representing here Old Indic and Early Middle Indic respectively). This difference is a result of the assimilation of two root-final consonants.<sup>2</sup> The following examples illustrate this difference.

<u>Sanskrit</u> <sup>3</sup>	<u>Pali</u>	<u>Gloss</u>
kars-	kass-	drag, plough
vart-	vatt-	turn
vardh-	vaddh-	grow, increase
laks-	lakkh-	mark

The change in the shape of verbal roots of this type is clear and straightforward. The assimilation of two root-final consonants necessarily leaves the root in a new shape, for the original (that is, Sanskrit) root shape can never occur in any verbal category: Since clusters of unlike consonants are not found, the full-grade forms of these types of roots occur in Pali with final geminates. Furthermore, syllabic r has been lost in Pali, appearing in most cases as the vowel a; thus, Ø-grade root formations occur with a rather than r:<sup>4</sup> e.g. Skt. vr̥ta > Pa. vatta; Skt. hr̥ta > Pa. hata. This restructuring of verbal roots is then an automatic consequence of the type of phonetic changes which occurred between the periods of Sanskrit and Pali.

1.1 The assumption of the identity between other Sanskrit and Pali roots has, to my knowledge, never been questioned. In spite of this, the language provides a great deal of evidence that a general restructuring of verbal roots has occurred in Pali, resulting, in many cases, in an underlying root shape which is quite different from its shape in Sanskrit. It is the purpose of this paper to present the evidence, both synchronic



and historical, for this restructuring.

2.1 To begin, let us consider the changes in the shape of present stems created by consonant assimilation between root-final and (Sanskrit) present tense suffix-initial consonants. The following examples illustrate the effects of these assimilations.

<u>Sanskrit</u>		<u>Pali</u>	
<u>Present stem</u>	<u>root</u>	<u>Present stem</u>	<u>Gloss</u>
asya-	as-	assa-	throw
āpno-	āp-	appo-	obtain
rdhya-	ardh-	ijjha-	thrive
kupya-	kop-	kuppa-	be angry
krudhya-	krodh-	kujjha-	be angry
klidya-	kled-	kilijja-	be wet
grdhyā-	gardh-	gijjha-	be greedy
tusya-	toṣ-	tussa-	be content
dabhno-	dabh-	dubbha-	injure
dīpya-	dīp-	dippa-	shine
duṣya-	doṣ-	dussa-	spoil
nrtya-	nart-	nacca-	dance
padya-	pad-	pajja-	go, fall
bhraśya-	bhraś-	bhassa-	fall
manya-	man-	mañña-	think
mādyā-	mad-	majja-	be exhilarated
yudhya-	yodh-	yujjha-	fight
rajya-	raj-	rajja-	color
rādhya-	rādh-	rajjha-	succeed
lubhya-	lobh-	lubbha-	be lustful
vāśya-	vāś-	vassa-	bark
vidhya-	vyadh-	vijjha-	pierce
śakno-	śak-	sakko-	be able
śāmya-	śam-	samma-	be calm

2.1.1 In Sanskrit, the three present-tense suffixes -ya-, -nā-, and -no- are quite frequent.<sup>5</sup> The present stem which results from the addition of these suffixes is always easily segmentable into the root





and the suffix, and it is generally only the root (in either its full-grade or  $\emptyset$ -grade form) which is found in the verbal categories outside of the present system: e.g. pres. stem tusya-; ppl. tusta-; infin. tostum; caus. tosaya- < tos- 'be content'.

However, as is obvious from the above list of present stems in Pali, the original root and suffix are no longer clearly definable, due to the fact that unlike consonant clusters are not permitted. In all cases, the suffix-initial consonants (y and n) have assimilated to the root-final consonants, producing geminates.

2.2 The problem which is created in Pali from the assimilation of the root-final and suffix-initial consonants is one of relating the new present stems to an underlying verbal root. The question is whether these present stems are derivable in the same manner as in Sanskrit (i.e. by the addition of certain present-tense suffixes to a root) or whether they have been reinterpreted as being subject to a different sort of derivation or possibly as no longer being derivable at all.

2.2.1 An examination of forms attested in the various verbal categories of some of these verb types will help to answer the above question. In each instance, the Sanskrit root and present stem are given, followed by the Pali present stem and all other relevant verbal forms which are attested.

Skt. ardh-; rdhya-; Pa. ijha-; fut. ijhissa-; aor. ijjh-; caus. ijjhāpe-; ppl. iddha, addha

Skt. as-; asya-; Pa. assa-; ppl. atta

Skt. krodh-; krudhya-; Pa. kujha-; ger. kujjhitvā; aor. kujjh-; fut. ppl. kujjhitabba; ppl. kuddha

Skt. kled-; klidya-; Pa. kilijja-; ppl. kilinna

Skt. gardh-; grdhya-; Pa. giijha-; ppl. giddha, gaddha, giijhita

Skt. tos-; tusya-; Pa. tussa-; caus. tose-; ppl. tuttha

Skt. dabh-; dabhno-; Pa. dubbha-; ger. dubbhitvā

Skt. dīp-; dīpya-; Pa. dippa-; caus. dīpe-; ppl. dittha

Skt. nart-; nrtya-; Pa. nacca-; fut. naccissa-; infin. naccitum; aor. nacc-; caus. naccāpe-; ppl. naccita

Skt. naś-; naśya-; Pa. nassa-; aor. nass-; fut. nassissa-; caus. nāse-



Skt. bodh-; budhya-; Pa. bujja-; fut. bujjhissa-; aor. bujjh-; infin. boddhum; agent noun bujjhitar-; caus. bodhe-, bujjhāpe-; ppl. buddha  
 Skt. man-; manya-; Pa. mañña-; aor. maññi-; ppl. mata, maññita  
 Skt. vās-; vāśya-; Pa. vassa-; ppl. vassita  
 Skt. vyadh-; vidhya-; Pa. vijja-; fut. vijjhissa-; ger. vijjhitvā, viddhā; infin. vijjhitum; caus. vijjhe-, vede-; ppl. viddha  
 Skt. yodh-; yudhya-; Pa. yujja-; fut. yujjhissa-; aor. yujjh-; caus. yodhe-; ppl. yuddha

As is immediately apparent from the above examples, in the majority of verbal forms which are attested for each of these particular roots, it is not the original (i.e. Sanskrit) root which is found, but rather the Pali present stem.<sup>6</sup> This is unambiguously observable in cases where the vowel i appears between the root and suffix, the entire structure of the root being preserved: e.g. vijjhitum; dubbhitvā; maññita, etc. Certain other (inherited) forms are ambiguous as to the exact shape of their underlying structures, due to the fact that assimilation between the root-final and suffix-initial consonants has obscured the root shape: e.g. ditta; viddha; tuttha, etc.

3.1 Before discussing the manner in which the types of forms just discussed fit into the verbal derivational system of Pali, we should at this point turn to consider the way in which the situation with these types of verbs compares with that of other types. An examination of forms attested in the verbal categories of some of the other types of roots would, then, seem to be in order. Following are a few examples which are illustrative of the existing state of affairs. (Forms are cited in the same manner as those in 2.2.1).

Skt. ched-; chinad-; Pa. chinda-; fut. chindissa-, checcha-; aor. chind-; infin. chinditum, chetum; ger. chinditvā, chetvā; caus. chindāpe-, chede-  
 Skt. loc-, (no present stem attested); Pa. luñca-; ger. luñcitvā; caus. luñcāpe-, loce-; ppl. luñcita

Skt. nod-, nuda; Pa. nuda-; aor. nud-; ger. nuditvā; agent noun nuditar-; ppl. nunna (d-n → n-n in -na participles)

Skt. mās-; māsā-; Pa. masa-; aor. mas-; ger. masitvā; grd. massa, masitabba; ppl. mattha, masita



Skt. jai-; jinā-; Pa. jinā; aor. jin-; fut. jinissa-; infin. jinitum;  
ger. jinitabba; ppl. jita<sup>7</sup>

what these examples clearly indicate is that it is not only the verbs whose present stems have changed shape through consonant assimilation which have generalized the present stem into the various verbal categories outside of the present system, but rather that this type of generalization has taken place in other types of verbs also. Thus, we must consider the possibility that a general restructuring has taken place such that the root shape as it occurs in the present stem is, at this stage of the language, the underlying verbal root. Acceptance of the fact that such a restructuring has in fact occurred entails in turn the acceptance that (1) the (Sanskrit) present-tense suffixes have ceased to exist (or at least to be in any sense productive) in Pali; (2) some verbal roots have a quite different shape from their shape in Sanskrit; (3) a single root vocalism can no longer be taken as basic for all verbal roots. These are quite different assumptions from those generally made for Pali; for, while scholars have recognized the trend toward generalization of the present stem to verbal forms in categories outside of the present system, they have nevertheless continued to assume that the present stems are still derivable from a verbal root (in most cases identical to the Sanskrit root in its 0-grade shape) rather than taking the present stem itself to be the basic (i.e. underlying) verbal root, from which all other verbal forms would then be derived. This assumption is implicit in traditional handbooks of Pali, such as Geiger, Pali Literature and Language and Mayrhofer, Handbuch des Pali (although these scholars failed to actually come to grips with the issue) and is quite explicitly made by Warder in his grammar Introduction to Pali, where the verbal roots are listed (except for the type given in 0.1) exactly as they are given for Sanskrit and classified as to the particular type of present-tense formation which will occur. What I wish to consider is the plausibility of this traditional assumption in light of the type of system which exists in Pali and of the historical developments which led to it.

3.2 In addition to the evidence already given for considering the present stem to be the underlying verbal root, there is another very significant fact about the language which lends a great deal of support to





the above conclusion. This concerns the vowel i which appears between the root and the suffix in some verbal forms (cf. the examples given passim). In Sanskrit, the insertion of this vowel is a minor rule and applies to all types of verbal formations.<sup>8</sup> It applies the most regularly, however, to non-alternating verbal forms. Now, there is a tendency, especially in the later stages of the language, to give up root ablaut, that is to keep the same root shape throughout all verbal categories. This simplification generally takes place in favor of the full-grade root vocalism. For example, there is a tendency toward the creation of full-grade participles in the later language, but no such tendency toward creating  $\emptyset$ -grade infinitives or futures.<sup>9</sup> Thus, it can be stated that i-insertion applies most regularly to forms containing the underlying root. In Pali, it is significant that i-insertion applies (nearly without exception) only to verbal formations containing the root as it appears in the present stem. In fact, nearly all verbal forms inherited with i in which the root does not correspond to the present stem have been replaced by formations containing this stem: e.g.

<u>Pali present stem</u>	<u>Sanskrit verbal form</u>	<u>Pali verbal form</u>
madda-	mr̥dita	maddita
moda-	mudita	modita
roda-	rudita	rodita
vassa-	vāśita	vassita
nuda-	noditr-	nuditara-

Thus, the tendency to generalize present stems to verbal categories outside of the present system combined with the fact that i-insertion applies only to verbal formations containing the present stem would appear to constitute strong evidence in support of the conclusion that synchronically, the present stem has been reinterpreted as the underlying verbal root.

4.1 Further support for the above conclusion can be obtained by examination of the historical facts, for there are certain changes which occurred between Sanskrit and Pali which appear to have made such a reinterpretation possible.

4.1.1 First of all, in Pali, there is generally only one present stem in use for any one verb, a situation which is quite different from



that which exists in Sanskrit, where, for most roots, there are several different present stems. Each type of present stem is, in general, predictable, the various present-tense suffixes being frequently semantically identifiable, and root vocalism, in turn, being predictable from the type of suffix.<sup>10</sup> In Pali, the one present tense form which survives has the several functions which characterized the various different formations in Sanskrit (transitive, intransitive, stative, etc.). In the majority of cases, the one present stem which is used in Pali is that which, in Sanskrit, consisted simply of the full-grade root plus the thematic vowel a (i.e. without the addition of any of the present-stem characterizing suffixes). Thus, since the full-grade root is the underlying verbal form in Sanskrit, the present stem is, for these verbs, automatically the underlying root. The large number of these verbs in Pali (for which the present stem and the underlying root were identical) led to other present stems being interpreted as underlying verbal roots. This reinterpretation brought about entirely new underlying root shapes for some verbs, such as those which have just been discussed, where the underlying root changed from the shape Ca/e/oC to Ca/i/u/CC: Pa. duss- replacing Skt. dog-, etc. It is important to note that it is because there is, in general, only one present-tense formation per verb in Pali that such a reinterpretation could be possible, for as long as several different types of present stems existed there could never have developed a feeling of a one-to-one relationship between the present stem and the underlying root.

4.1.2 Secondly, in close conjunction with the above factors, it seems quite likely that the changes in the shapes of present stems, brought about by consonant assimilation, aided in the reinterpretation of present stems as underlying roots, for they were no longer clearly segmentable into a root and a consonant-initial suffix, but rather, into what could very easily be considered a root and a thematic vowel, and thus bore a close relationship to other present stems of this latter type: viḷḷh-a-; nass-a-; duss-a-, etc., similar to mas-a-; madd-a-; moc-a-, etc.

4.1.3 Thirdly, consonant assimilation aided in the reinterpretation of present stems as underlying roots in yet another way. As was pointed out in 2.2.1, assimilation of root-final and suffix-initial consonants obscures



the exact root shape. Inherited participles such as ditta and viddha can be derived from roots in two final consonants in basically the same manner as from roots in a single final consonant, by allowing the addition of consonant simplification: /dipp-ta/ → /dip-ta/ → ditta; /vijjh-ta/ → /vijh-ta/ → viddha.<sup>11</sup> Thus, the ambiguity of these surface forms helped to make it possible to interpret the present stem as the underlying verbal root.

5.1 It appears that there is good motivation historically for the present stem to be reinterpreted as the basic verbal root in Pali and the synchronic facts provide good evidence that such a reinterpretation actually occurred.

As was pointed out in 3.1, it has been generally assumed that present stems are still derivable and that those present stems which result from assimilation of a root-final consonant to the initial consonant of one of the Sanskrit present-tense suffixes are obtainable in this manner in Pali also. However, in light of all of the facts presented in this paper, it seems fairly clear that there is no way (or reason either) to attempt to relate the formation of these present stems to a specific suffix, as is possible in Sanskrit. Even if it were possible to recover the original root (this possibility does exist in some cases) and to then add one of the Sanskrit present-tense suffixes to it, no purpose would be served, as the underlying form (i.e. the Sanskrit root) often is clearly recoverable in only one or two categories, the rest displaying the root in the shape in which it appears in the Pali present stem. Such a procedure would, then, in effect still entail the claim that there is a new basic form which is being generalized to the various verbal categories. Even roots in final vowels which have one of these suffixes often display this suffix in the other verbal categories, thus providing further evidence that the present stem is felt to be the basic verbal form: e.g. pres. stem nahāya-; infin. nahāyitum; ger. nahāyitvā; fut. ppl. nahāyitabba (Skt. root snā- 'bathe').<sup>12</sup> (Another such example is jinā-, given in 3.2).

Similar arguments can be leveled against positing the same underlying vocalic grade for all roots, as is in general possible for Sanskrit. In Pali, there is no means of systematically characterizing present stems as





to whether they will have a full-grade or a  $\emptyset$ -grade root vocalism. This situation is due, of course, to the fact that, in most cases, there is only one present stem per verb in use and to the fact that the different present-tense suffixes which served to identify particular root formations in Sanskrit are no longer transparent in Pali. If we were to follow the Sanskrit system, then, and posit an underlying form in Pali with a full-grade vowel (or  $\emptyset$ -grade, if this were to be accepted) whenever alternations occur, each root would have to be marked individually for whether it has a present-tense formation with full-grade or  $\emptyset$ -grade vocalism. It is true, in Sanskrit, each root must be marked as to the type of present-tense formations which it will take; however, this is not unreasonable, since most Sanskrit roots are clearly characterized by different types of present stems. Furthermore, in Pali, for many verbs, the form with the full-grade vowel would occur in only one or two categories, the rest occurring with the vowel which appears in the present stem, again lending further support to the view that it is the present stem which is more basic than other alternates of the root. Thus, if the Sanskrit root were taken to be the underlying form in Pali and marked as to the type of present stem that it will take, the verbal categories in which the present stem is used will, in turn, have to be marked as such. The underlying root would, in such cases, be somewhat superfluous, serving as a base, yet, in many cases, never actually occurring in a transparent and unambiguous shape.

6.1 From the facts presented in the preceding paragraphs, it is clear that the possibility of present stems being interpreted as underlying verbal roots resulted from not just one change, but several, namely: one present stem with several functions having replaced several present stems, each with a different function; identity, in a large number of verbs, of the present stem and the underlying root; change in the shape of many present stems, causing them to be no longer clearly derivable. Thus, there was good motivation historically for present stems to be interpreted as underlying verbal roots, and furthermore, synchronically, there is good reason to believe that this interpretation actually took place.

6.2 Taking the present stem as the underlying verbal form in Pali automatically necessitates a somewhat different type of derivational process



from that of Sanskrit. This analysis entails, of course, allowing both full-grade and  $\emptyset$ -grade vowels to be underlying, since whatever shape occurs in the present stem is the underlying shape. Therefore, if both full-grade and  $\emptyset$ -grade can occur in underlying roots, verbal derivation will have to include both full-grade and  $\emptyset$ -grade formation processes, since there are a number of inherited forms remaining whose root vowel is not identical to that of the present stem (i.e. underlying root): e.g. pres. stem kosa-: ppl. kuttha; pres. stem kuppa-: caus. kope.<sup>13</sup>

Although allowing both the full-grade and  $\emptyset$ -grade formation processes to function as a part of verbal derivation represents a slight complication in comparison to the Sanskrit system, where one ablaut grade can (nearly) always be taken as basic, the complication seems to be a minor one when viewed from the perspective of the over-all system of Pali itself, rather than from a perspective which (often unnecessarily) includes factors which were present at earlier stages of the language.

Furthermore, taking the present stem as the underlying verbal form in Pali permits a significant derivational pattern to emerge: In Pali, there exist two competing processes of verbal derivation, one being the use of the present stem, unaffected by either the  $\emptyset$ -grade or full-grade processes, and the other being the use of the 'historical' form, often altered by one of the two morphological processes and usually involving consonant assimilation between the root-final and consonant-initial suffixes (as in /kos-ta/ → /kus-ta/ → kuttha, ppl. of the root kos- (pres. stem kosa-), etc. The assumption that the present stem is always the underlying verbal root allows the above two competing processes to be tied up in a significant way: Either the underlying verbal root is used, without any change whatsoever affecting it, or else this same underlying verbal root is used, but with certain changes applying to alter its shape in predictable ways, depending on the particular verbal category. That is, there is always one single form which can undergo a morphological change in shape or remain in its underlying shape and which can undergo i-insertion if this latter shape obtains. Thus, within the above type of system, the tendency toward the use of the present stem and i-insertion (and the application of i-insertion exclusively to the unaltered present stem) is very clearly motivated, for basic root



structure is always preserved. This seems to be an entirely natural type of situation to have arisen in view of the system as it existed in Sanskrit and in terms of the types of changes which occurred between the two stages of the language.<sup>14</sup>

#### FOOTNOTES

<sup>1</sup>A shorter version of this paper was read at the 1972 annual meeting of the Linguistic Society of America, held in Atlanta, Georgia.

<sup>2</sup>Unlike consonants are not permitted in Pali, except for the combination of a nasal plus an obstruent, where the nasal becomes homorganic to the following obstruent. Consonants assimilate in the following manner in Pali (given in decreasing power of resistance to assimilation): obstruents, sibilants, nasals, l, v, y, r. When two stop consonants of the same class meet, the first assimilates to the second: bd → dd; nm → mm, etc. Liquids and semi-vowels assimilate only in the order given above: e.g. lv → ll; ry → yy; yl → ll; rv → vv. Several of the consonant assimilations need additional explanation. Dentals plus y change to geminate palatals: t(h)y → cc(h); d(h)y → jj(h); ny → ññ. s plus a stop consonant changes to a geminate aspirated stop: e.g. st → thth → tth; sk → khkh → kkh.

<sup>3</sup>Throughout this paper, I will cite Sanskrit roots in their full-grade forms rather than  $\emptyset$ -grade, which is the usual manner of exemplification. The reason for this deviation is that I believe there to be good arguments for considering the full-grade as the basic form for all ablauting roots. A thorough discussion of this matter can be found in O'Bryan (1973).

<sup>4</sup>Originally, syllabic r became i, u, or a depending on the nature of the preceding consonant. However, this rule was lost, and in verbal formations, the vowel a is nearly always found. The details of this particular change are not sufficiently relevant to warrant discussion however. A few verbal formations in which i and u occur are given in the examples in 2.2.1.

<sup>5</sup>There are no examples given of a present stem originally formed with the suffix -na-. Most clear examples of such forms are in roots with final vowels, and are thus not relevant to assimilations which changed the stem (or root) structure.

<sup>6</sup>It is not, strictly speaking, the present stem in Pali which is found in the other verbal categories and to which i-insertion applies, for the present stem consists of the root plus the thematic vowel a (e.g. vi.jjh-a-). For convenience, however, I will refer to the form of the root which appears in the present stem as the 'present stem'.





<sup>7</sup>In both Sanskrit and Pali, a thematic present jaya- occurs beside jinā-. In Pali, verbal forms occur which are made from both present stems: e.g. fut. jinissa- beside jayissa-.

<sup>8</sup>Originally, this i which appears frequently in Sanskrit verbal formations was not an inserted vowel, but rather was the vocalic reflex of a laryngeal in inter-consonantal environment, and as such, was an actual part of set roots. At a relatively early stage of the language, however, this vowel began to spread analogically to verbal forms of anit roots and was then interpreted as an inserted vowel. Thus, for convenience, I will refer to a process of i-insertion as being a phenomenon characteristic of Sanskrit in general.

<sup>9</sup>This is in fact one argument which can be used for considering the full-grade form of the root to be underlying in Sanskrit.

<sup>10</sup>Present stems formed by the addition of a suffix (other than the thematic vowel a) have  $\emptyset$ -grade root vocalism.

<sup>11</sup>viddha is derived by the operation of Bartholomae's Law. It is irrelevant that the root-final consonant has changed from a dental stop to a palatal stop. What is crucial for Bartholomae's Law is that it is still a voiced aspirated stop: e.g. Pa. /vijh-ta/ → vijh-dha/ just like Skt. /vidh-ta/ → vidh-dha/.

<sup>12</sup>The Sanskrit root snā- became Pali nahā- through the change of sn to nh furthermore cannot remain in initial position, and the vowel a was inserted to break up the impermissible cluster.

<sup>13</sup>The geminate consonants have been simplified due to a constraint in Pali according to which no syllable may contain more than two moras. A two-mora syllable is one which consists of a short vowel in a closed syllable, a long vowel in an open syllable, a nasalized vowel. The contracted diphthongs e and o are phonetically long. Thus, structures such as Ce/oCC are in an impermissible shape and must be adjusted.

<sup>14</sup>There are a number of interesting reinterpretations in the verbal derivational processes, both phonological and morphological, which resulted from the restructuring of verbal roots. In most cases, the historical forms which remain in use in Pali fit into the new system in a (sometimes strikingly) natural manner. As is to be expected, some complications did result. Most of them are relatively minor, however, and provide interesting insights into the types of situations which result at a stage of a language when old and new processes are still very much alive and in competition with each other. Discussion of these results of the restructuring are beyond the scope and purpose of this paper. A thorough investigation into the development of the verbal system can be found in O'Bryan (1973).



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NOTES ON QUECLARATIVES AND TAG QUESTIONS  
IN HINDI-URDU\*

Ahmad H. Siddiqui

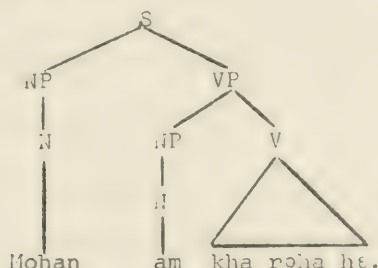
In the grammars of Hindi-Urdu, one finds descriptions of various kinds of sentences, for example, declarative interrogative and imperative. However, these grammars do not discuss certain types of sentences which have the form of one type in their surface structure but are actually used and understood as another type. Our speech acts are characterized by various uses. We use them for making statements, asking questions, giving orders, making requests and so on. The purpose of this paper is to discuss two such uses, namely, asking questions and making assertions in Hindi-Urdu and to see under what contexts and circumstances one type of speech act entails another and further, if there are any syntactic properties to be noted in addition to the stipulated semantic value.<sup>1</sup>

A declarative sentence such as (1) in Hindi-Urdu has the structure shown in the following tree (2)

(1)        mōhən am kha rōha hē.<sup>2</sup>

Mohan mangoes eating is  
'Mohan is eating mangoes.'

(2)

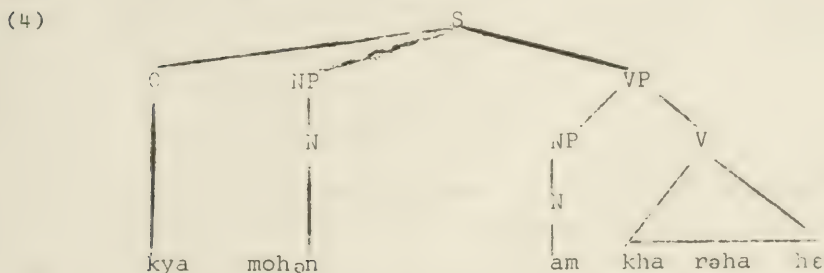


An interrogative sentence, on the other hand, such as (3) has the structure shown in tree (4).

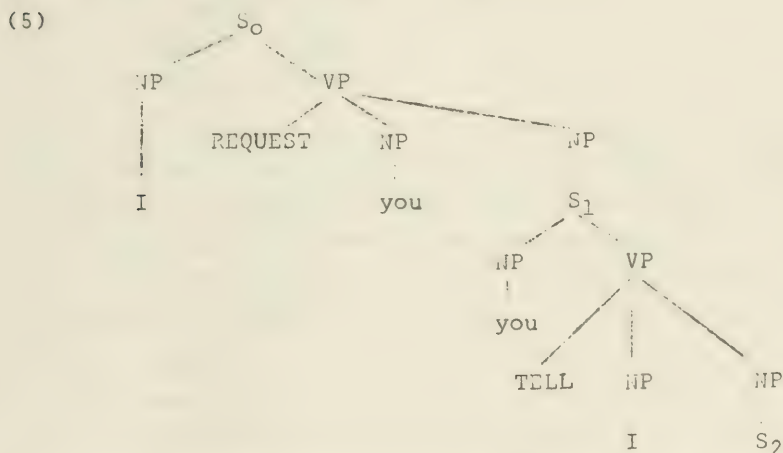




- (3) kya mohən am kha rəhə hē?  
 Q Mohan mangoes eating is  
 'Is Mohan eating mangoes?'



Questions have a semantically complex abstract higher structure which doesn't show up in the superficial structure. This higher representation is given in (5).



It's only S<sub>2</sub> that shows up on the surface as in (4) above.

There are situations in which one form of sentence, say, a statement, may have the effect of an imperative, for example,

- (6) yəhā bəri gərmī hē.  
 here big hot is  
 'It's too hot in here.'

may be construed by the hearer as a request to open the window in a crowded room. In the same way, a sentence with the surface form of a question may also have, in a proper context, the semantic value of a declarative sentence. The



following two yes/no questions, for instance,

- (7)        kya    fransī̄sī    asan   hɛ?  
              Q        French        easy    is  
              'Is        French        easy?
- (8)        kya    salən    tez    hɛ?  
              Q        curry        hot    is  
              'Is the curry    hot?'

can be interpreted as declaratives if said in the appropriate circumstances. For example, a mother whose son is learning French and German as foreign languages could say to her son 'kya fransī̄sī asan hɛ?' on the latter's learning French faster than German. In this situation the sentence would have the effect of an assertion:

- (9)        fransī̄sī    asan   hɛ.  
              French        easy    is  
              'French        is    easy.'

Or take the next sentence (8). It could be uttered by an Indian hostess to her Mexican guest at the dinner table. The foreign guest expects the Indian food to be milder than his native food, but discovers it, on the contrary, to be quite hot. Under the circumstances, she may say sentence (8) with the effect of an assertion as

- (10)        salən    tez    hɛ.  
              curry    hot    is  
              'The curry is hot.'

It could also be uttered with a negative effect in the situation where the guest happens to be an American and expects the Indian food to be hot but finds it mild. The hostess, under the circumstances, utters the sentence with the negative effect:

- (11)        salən    tez    nahī̄    hɛ.  
              curry    hot    not    is  
              'The    curry    isn't    hot.'

The use of such question sentences with the 'illocutionary force' of assertion, as we will see later, is not only an extralinguistic phenomenon but also has syntactic



significance.<sup>3</sup> Sentences (7) and (8) could be used with the force of both positive and negative assertion but this is not the case with all question sentences in Hindi-Urdu. Negative questions, for example, can be used with a positive assertion:

- (12)        kya    frānsīsī    āsan    nahī̃    hē?  
               Q        French        easy    not    is  
               'Isn't French        easy?'

This could be said by the same mother to her child who didn't believe French to be easy but later found it so upon which this conveys the meaning 'frānsīsī āsan hē.'

Unlike the yes/no questions which could have the illocutionary force of positive or negative assertion, the information question in Hindi-Urdu can have the force of its opposite polarity as, for example:

- (13) a)    frānsīsī    kēun    jāntā    hē?  
               French        who        knows  
               'Who            knows        French?'
- b)    koi    frānsīsī    nahī̃    jāntā    (hē).  
               any    French        not        knows  
               'No one knows French.'
- (14) a)    Frānsīsī    kēun    nahī̃    jāntā    (hē)?  
               French        who        not        knows  
               'Who doesn't know French?'
- b)    har    ek    frānsīsī    jāntā    hē.  
               every one    French        knows  
               'Everyone        knows        French.'

Sentences (13 a) and b) can be used in the same circumstances and similarly (14 a) and b) which have the opposite effect. But (13 a) and (14 b) cannot be used in the same circumstances or situations with the same effect.

There are a few polarity items<sup>4</sup> such as zara barabar, ek rāttī, ek qatra, pahlehi, etc., which are sensitive to negative and affirmative semantic contexts. Negative polarity items occur in grammatically negative contexts and positive polarity items in positive contexts as for example





in (15) to (20):

(15) mere pas ek rattī bhī nahī (he)  
my with a cent also not is  
'I don't have a red cent.'

(16) \*mere pas ek rattī bhī he.  
I have a red cent.

(17) mujhe lagta he ki usne zerraberaber.  
to me appears that he damn thing  
bhī kam nahī kia.<sup>5</sup>  
also Job not did  
'It appears that he didn't do a damn thing.'

(18) \*mujhe lagta he ki usne zerraberaber  
bhī kam kia.  
'It appears that he did a damn thing.'

(19) egnu ne pahle hi istifa de dia.  
Agnew already resignation gave  
'Agnew resigned already.'

(20) \*egnu ne pahlehi istifa nahī dia.  
'Agnew didn't resign already.'

Notice also that the sentences in which the constraints on the use of negative or positive polarity items are violated are not acceptable in English either. But the negative polarity items can be used in a positive question with the force of a negative assertion and the positive polarity items in a negative question:

(21) kya rajaō ka aj ke samaj mẽ zerraberaber.  
Q Rajas of today's society in damnthing  
bhī kam he.  
also work is  
'Do rajas have a damnthing to do in the present society.'

(22) kya uske pas ek rattī bhī he.  
Q him with a red cent is  
'Does he have a red cent?'

The assertive force in the above two sentences is not due to the occurrence of particular items. As the following sentences show these items can occur in non-asserted sentences:



- (23) zorra beraber bhī kam met karo.  
damn thing work don't do  
'Don't do a damn thing.'
- (24) usne mujhe zorra beraber bhī nēnī dia.  
he me damn thing not give  
'He didn't give me a damn thing.'
- (25) agar mē zorra beraber bhī nē kahū to kya hoga.  
if I damn thing not say then what will be  
'What would happen if I didn't say a damn thing?'

However, notice the following sentence which is used only as a question:

- (26) kya rajaō ka aj ke samaj mē zorra beraber bhī kam nahī?  
Q rajas of today's society in damn thing work not  
'Don't Rajas have a damn thing to do in the present society.'

Sentences (21) and (26) are crucial here. We notice that (21) is unambiguously a negative assertion whereas (26) is unambiguously a question. They differ in spite of containing the same elements in their surface form. It seems, then, that their speech-act force must be explained in abstract structural terms.

The above two sentences (21) and (26) behave differently on the following two syntactic tests with respect to interrogativity and declarativity. The form axirkar 'after all' can cooccur with (21) but not with (26):

- (21) a) axirkar kya rajaō ka aj ke samaj mē zorra beraber bhī kam he.  
after all Q rajas of today's society in damn thing work is  
'After all, do Rajas have a damn thing to do in today's society?'
- (26) a)\*axirkar kay rajaō ka aj ke samaj mē  
after all Q Rajas of today's society in  
zorra beraber bhī kam nahī (he).  
damn thing work not is  
'After all, don't Rajas have a damn thing to do in today's society?'

In the same way a declarative may be followed by an assertion beginning with the form phir bhi 'yet' but a question may not as, for example,



(27) zatpat ka bhed kerna ,arqanuni he.  
caste of to practice unlawful is

phir bhī kuch bhartīy mante hē.  
yet some Indians believe are  
'The practice of the caste system is prohibited by  
law, yet some Indians believe in it.'

(28)\*zatpat kya he, phir bhī mē nahī janta.  
caste what is yet I not know  
'What's the caste system, yet I don't know?'

In the following (21) behaves like a declarative in that it may be followed by a phir bhī clause and (26) behaves like a question in that it may not be followed by such a clause:

(21) b) kya rajaō ka aj ke samaj mē  
Q rajas of today's society in  
zarra barabar bhī kam he?  
damn thing work is

phir bhī log unkī izzat karte hē.  
yet people them respect do  
'Do Rajas have a damn thing to do in the present  
society, yet people respect them.'

(26) b) \*kya rajaō ka aj ke samaj mē  
Q Rajas of today's society in  
zarra barabar bhī kam nahī (hē),  
damn thing work not is

phir bhī log unkī izzat kert hē.  
yet people them not believe are  
'Don't Rajas have a damn thing to do in the present  
society, yet people respect them.'

The above tests, i.e., the cooccurrence of axirkar and phir bhī may be applied to other sentences. In the following paragraphs we will take the above sentence (7) with its assertive force in two uses and apply these tests and see if they distinguish the declarative from the interrogative. First, we will try the sentence with its effect of negative assertion in the following dialogues between A and B.





(29) a) A: tumharī fransīsī ciṭṭhī ,eḷet hē  
 your French letter incorrect is  
 'Your letter in French is incorrect.'

B: ek adh ,eḷtī to ho hī jati hē. axirkar fransīsī asan to nahī.  
 one half error occurs after all French easy not is  
 'A few errors are possible. After all, French isn't easy.'

(29) b) A: tumharī fransīsī ciṭṭhī ,eḷet hē  
 your French letter incorrect is  
 'Your letter in French is incorrect.'

B: ek adh ,eḷtī to ho hī jati hē axirkar kya fransīsī asan hē ?  
 one half error occurs after all Q French easy is  
 'A few errors are possible. After all, is French easy?'

(30) a) A: tumharī fransīsī ciṭṭhī ,eḷet hē.  
 'Your letter in French is incorrect.'

B: fransīsī asan nahī hē, phir bhī koḷiḷ karte rēhna cahiye.  
 French easy not is yet try do keep should  
 'French isn't easy. Yet I should keep trying.'

(30) b) A: tumharī fransīsī ciṭṭhī ,eḷet hē.  
 your French letter incorrect is  
 'Your letter in French is incorrect.'

B: kya fransīsī asan hē ? phir bhī koḷiḷ karte rēhna cahiye.  
 Q French easy is yet try do keep should  
 'Is French easy? Yet I should keep trying.'

Again, by applying the above test to the following dialogues we find that a positive question doesn't behave like an assertion when used with this effect:

(31) a) A: mujhe fransīsī mē xet likhna a गया.  
 to me French in letter write came  
 'I learned to write letters in French.'

B: mujhe yaqīn tha ki tum sikh loge. axirkar fransīsī asan hē  
 to me sure was that you learn will after all French easy is  
 'I was sure that you'll learn it. After all, French is easy.'

(31) b) A: mujhe fransīsī mē xet likhna a गया  
 'I learned to write letters in French.'



B: mujhe yaqīn tha ki tum sīkh loge, \*axirkar kya fransīsī asan hē?  
 to me sure was that you learn will after all Q French easy is  
 'I was sure that you'll learn it. After all, is French easy?'

(32) a) A: mujhe fransīsī mē xət likhna a gəya.  
 'I learned to write letters in French.'

B: mujhe yaqīn tha ki tum sīkh loge. fransīsī asan hē  
 to me sure that you learn will French easy is  
 phir bhī ye ,erdilcəsp nəhī.  
 yet it uninteresting not  
 'I was sure that you'll learn it. French is easy. yet it's  
 not uninteresting.'

(32) b) A: mujhe fransīsī mē xət likhna a gəya.  
 'I learned to write letters in French.'

B: mujhe yaqīn tha ki tum sīkh loge. \*kya fransīsī asan hē?  
 to me sure was that you learn will Q French easy is  
 phir bhī ye ,erdilcəsp nəhī.  
 yet it uninteresting not.  
 'I was sure that you'll learn it. Is French easy? Yet  
 it is not uninteresting.'

As we have seen in the above examples, it is the question  
 'kya fransīsī asan hē' with the meaning of 'fransīsī asan nəhī  
 hē' that grammatically functions like a declarative sentence.  
 Such sentences, known as queclaratives<sup>6</sup> have the force of  
 the corresponding assertions of opposite polarity. In other  
 words, question forms which commit their utterer to the opposite  
 view from what is superficially asked are known as queclaratives.  
 Queclaratives, in this respect, seem to have a semantic  
 closeness with the tag question in English (Sadock 1971).

I would like to examine if the same is true of Hindi-Urdu  
 queclaratives and tag -questions. The structure of tag questions  
 seem to be straight forward in Hindi-Urdu as the following  
 sentences exemplify:

(33) śilā sitar bajatī hē nē?  
 Sheila sitar plays not  
 'Sheila plays sitar, doesn't she?'





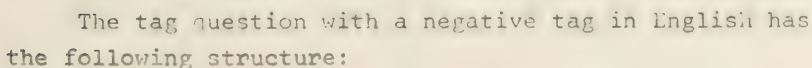




Since queclaratives and tag questions seem to have similar semantic properties, in the situation where a queclarative like (7) is appropriate, a tag question may also be used, for example:

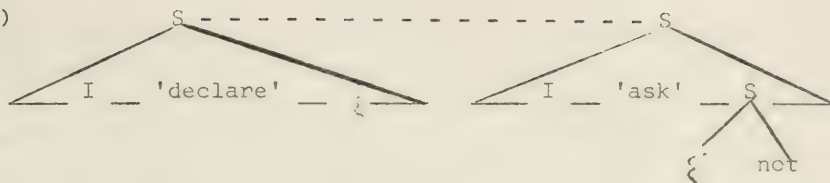
- In the situation where a negative declarative such as (11) is appropriate, a tag question may also be used, for example,

- We notice two important facts in connection with queclaratives and tag questions. First, the polarity of the tag question apparent in the English counterpart is similar to the polarity of the corresponding queclarative. Second, the polarity of the base of the tag which is declarative in form, is similar to the assertion of a yes/no queclarative. The particle na 'not' at the end of a declarative sentence in Hindi-Urdu equals, in effect, the polarity of a tag question in English. The remote structure of the positive tag question in English (Sadock 1971) is similar to positive queclaratives as follows:





(46)



As the above structures show, the English tag questions are a combination of an assertive and an interrogative clause in that order. If we reverse the order, we don't get a well-formed sentence. In Hindi-Urdu the constraint is similar in nature in the superficial structure except that here there is the particle na following assertion which cannot change places without resulting in ill-formed sentences as, for example,

(47)       fransīsī asan he na?  
              'French is easy, isn't it?'

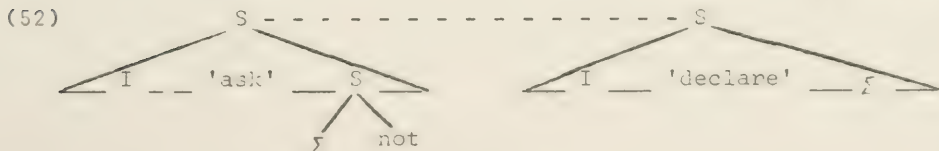
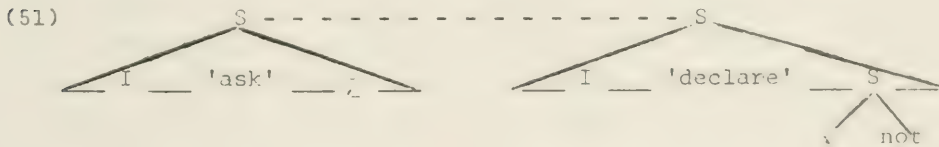
but (48) \* na       fransīsī asan he.  
              'not, French is easy'

Not only particle movement results in an unacceptable sentence, but also a tag question can't begin with interrogative elements either in English or in Hindi-Urdu as, for example,

(49)       \* kya fransīsī asan he na ?  
              \* 'Is French easy, it isn't?'

(50)       \* kya fransīsī asan nehī he na ?  
              \* Isn't French easy, it is?

The queclaratives in English, it has been proposed, have the same structure as the tags except in reverse order. Positive and negative queclaratives have the structures (51) and (52) respectively:





As we see in the above structures, the queclaratives have an interrogative clause followed by an opposite polarity assertive clause. However, the assertive clause is deleted to get the well-formed queclarative. A similar phenomenon exists in Hindi-Urdu where the interrogative clause is retained but the particle nə, the counterpart of the English assertive tag, gets deleted:

- (53) a) \*kya fransīsi asan hē nə ?  
       \*'Is French easy, it's not.'  
       b) kya fransīsi asan hē?  
       'Is French easy?'
- (54) a) \*kya fransisi asan nēhī̃ hē nə ?  
       \*'Isn't French easy, it is.'  
       b) kya fransīsi asan nēhī̃ hē ?  
       'Isn't French easy?'

To sum up, we have seen that there are circumstances in which a question is used with the illocutionary force of assertion. The meaning of such sentences is understood not literally but by their use. It is not only extralinguistic considerations by which queclaratives are distinguished from pure questions but the cooccurrence constraints on certain items also play an important role here. Queclaratives allow subsequent non-question conjunctions whereas pure questions do not. Moreover, queclaratives are a combination of an interrogative and an assertion, the latter being deleted. In Hindi-Urdu it is the tag particle nə that is deleted for queclarative use. Queclaratives and tag-questions seem to share some properties. Queclaratives differ from tags in that both the speaker and the hearer strongly share their conviction about the proposition contained in the former, whereas the speaker is uncertain about it in the latter. Finally, in view of their illocutionary force and syntactic properties, I find a similarity between English and Hindi-Urdu queclaratives.





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<sup>1</sup>According to Gordon and Lakoff, 'under certain circumstances, saying one thing may entail the communication of another.' They also distinguish between 'literal' and 'implied' meanings. See (Gordon and Lakoff, 1971).

<sup>2</sup>[t] symbolizes a dental stop. A consonant followed by [h] (as [kh] ) symbolizes one aspirated sound in the transcription.

<sup>3</sup>Austin defines and discusses three types of speech acts, locutionary, illocutionary and perlocutionary. The sense in which we use an illocutionary act determines its illocutionary force. See (Austin, 1962).

<sup>4</sup>'Polarity-sensitive' items occur only in affirmative or only in negative sentences. See (Baker 1970).

<sup>5</sup>Notice also.

mujhe nahĩ lægta he ki usne zærrabærabæ  
bhĩ kam kia.

which incidentally supports Bhatia's claim that there is Neg-raising in Hindi. See (Bhatia, 1972).

<sup>6</sup>'Queclaratives' refers to sentences interrogative in form but declarative in illocutionary force. See (Sadock, 1971).



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